

# CLAY RECORD

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### THE MANUFACTURE OF LARGE FIRE-CLAY GOODS

Many makers of large articles in clay, especially the manufacturers of tanks, baths, and other large sanitary appliances, appear to be entirely oblivious to the characteristics which the clay of which such articles are made should possess.

Sanitary pipe makers are, as a class, much more careful in selecting clay with the desired properties for their goods, although the difficulties of the sanitary ware manufacturer are liable to be far greater if he does not possess the necessary knowledge than when pipes are being made.

In the first place it is necessary to consider what properties are required in the materials composing a large tank or bath, glazed inside and out, so that an attempt may be made to obtain a material, or mixture of materials, which shall as nearly as possible possess these good properties, whilst not, at the same time, possessing more than a minimum of bad ones.

The chief characteristics of any clay or clay mixture may be considered under the following heads:—Contraction, porosity, fineness of material, refractiveness, and composition. In all classes of clayworking these must be taken into consideration, but in the manufacture of large articles some of them are particularly important.

#### THE COMPOSITION OF THE CLAY.

The chemical analysis of a clay will but seldom reveal its suitability or otherwise for the manufacture of baths and tanks, except in so far as it reveals the presence of an unduly large amount of fluxing materials, or of iron compounds. The first of these would prevent the goods being fired at a temperature sufficiently high to melt and mature a really durable glaze, whilst the iron compounds would seriously affect the color when certain classes of goods—such as white or straw-colored ware—are to be made. Certain iron compounds would also cause other troubles, which will be dealt with later, but the ordinary chemical analysis does not distinguish the different forms in which iron may exist in a clay.

The majority of the clays used for the manufacture of very large articles are of the fire-clay class, and contain upwards of 65 per cent. of silica, about 1.5 per cent. of iron compounds, and the same proportion (or less) of fluxes. The remainder of the clay is almost entirely alumina, of which there should be about 30 per cent.

Clay for large articles should not be too fine, hence the alluvial clays are, as a rule, unsuitable for this class of work, as the method of their formation has caused them to be made of extremely fine particles, so that they cannot withstand repeated changes of temperature so easily as a coarser clay. It is in consequence of this that the rock clays, whose particles are much larger, are the most suitable for the production of large ware.

The purity of the clay and its freedom from undesirable ingredients is another matter of great importance to the clayworker. Thus the fire-clays have, as a class, the great disadvantage of containing pyrites or "ironstone," which is a frequent cause of unpleasant discoloration.

#### IMPURITIES.

Unless these impurities can be removed the clay can never be satisfactorily used for the best class of sanitary ware, but much may frequently be done by a very careful sorting of the clay before it is sent to the grinding mills. Pyrites nodules are particularly easily recognizable, and if the large lumps of clay received from the pit are broken carefully with sharp, rapid blows of a hammer, the clay will split without breaking the nodules. These can then be cut out of the clay so completely that the small amount of pyrites left can do little or no harm. It is, however, essential that the clay should be broken by hand into pieces not larger than a boy's fist, or some of the ironstone nodules will be overlooked. This work of sorting out the clay should be placed in the care of thoroughly conscientious men, as if it is carelessly done the defect can never afterwards be removed, though certain additional precautions are possible which will, to some extent, tend to minimize the evil effect of any undetected pyrites.

Other impurities, such as pieces of vegetable matter, coal, etc., may be picked out at the same time as the ironstone,

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but there are others, such as certain shales and a variety of minerals, which cannot be so removed. Fortunately, there are many clays which are sufficiently pure to require no treatment beyond careful sorting. The others are not suitable for large goods, as the cost of purifying them would prove prohibitive.

The removal of less suitable clays from the main bulk must also be carried out at the same time as the pyrites is removed, providing that it has not been done at the pit. It is, however, far better that the man in charge of the mining of the clay should set aside the better qualities of clay and keep them separate from the rest, so that most of the sorting out of different clays may be avoided. This is particularly necessary when the clay seams twist and turn considerably, so that there is some likelihood of inferior seams becoming mixed with the superior clay in the mine.

As the clay for large articles is required to be somewhat coarse in texture, it should not be exposed to the weather before grinding. Above all, it must not be allowed to "weather" before being sorted, or the atmospheric influences will convert some of the pyrites into soluble iron compounds, which can never be removed from the clay at a cost which will allow of a profit on the goods.

### PREPARING THE CLAY.

Theoretically, the best way of preparing a clay for large articles, which would be free from the majority of impurities, would be to wash it; but in practice this has not worked satisfactorily, because the washed clay separates into layers of varying composition, and the ordinary methods of mixing are insufficient to render it as homogeneous as clay which has not been washed. In addition to this, the cost of washing has a serious effect on the composition of the majority of fire-clays, because it removes some of the silica, and in any case its cost renders it impracticable to most manufacturers.

Various materials are mixed with the clay during or after grinding in order to confer on it certain properties which in its natural state it does not possess. Thus, to lessen the amount of contraction of the clay in the kiln, and to prevent the goods from warping, it is usually necessary to add a considerable proportion of non-contracting material. The composition of this will, naturally, vary with the clay used, and its amount will depend upon the plasticity and the contraction of the clay. The simplest material for this purpose is burnt clay, as this has precisely the same composition as the main bulk of clay used without any power of shrinking during the drying or in the kiln. This burnt clay may be specially manufactured (by making the clay into bricks and firing them on the floor or in odd corners of the muffle kiln), or broken goods may be used. In the latter case care must be taken not to introduce too much glazed ware, as the glaze acts as a flux and tends to vitrify the ware. Burnt clay, for baths and similar large articles, should not be allowed to become mixed with coal or ashes, as these only make it impure. On this account it is best to burn it in a muffle kiln in the shape of bricks.

When it can be obtained sufficiently pure, and especially when the clay is somewhat poor in alumina, the substitution of burnt bauxite for burnt clay is a great advantage. Bauxite

is an impure alumina ore which contains upwards of 60 per cent. of alumina, about 10 per cent. of silica, and 20 to 30 per cent. of water, besides varying small amounts of fluxes and iron compounds. As its composition varies greatly, it should be analyzed before use to ensure its freedom from an undue proportion of objectionable ingredients. It is burnt in a manner similar to clay, and, like it, is mixed with the clay before or after grinding. As burnt bauxite has little or no binding power, it is convenient to temper it with a quarter of its weight of fire-clay before burning.

The proportions of burnt clay or bauxite to be added to the raw clay will depend on the plasticity and contraction of the latter. A strong clay will allow of the addition of a much larger proportion than will a less plastic clay. Hence no definite proportions can be given, though four parts of raw clay and one of burnt material is frequently used, and some very plastic clays will stand the addition of half their weight of burnt material, and still enable the workmen to finish the surface properly. The best limit is that at which a moderately skilled workman can obtain a good finish on the clay, and when the skill of the worker increases, more burnt material may be added. As men vary greatly in their power of working with material of the composition here referred to, some care must be exercised, as it is rarely desirable to add less than one-quarter of burnt material, and few men can work with clay containing more than one-half. At the same time much may be done with care and practice, and by having the materials at the right degree of fineness. This will be referred to later.

For portions of articles which are particularly liable to shell off, it is sometimes necessary to use a special clay, which has a greater binding power. The use of a more plastic mixture will not help matters much, as the binding power is required in the firing rather than in the earlier stages. Some fluxing material must, therefore, be added, and of these plaster of Paris is one of the most convenient. Only a very small proportion—not exceeding one-fiftieth of the weight of dry clay—should be used, or other difficulties will ensue. Indeed, the use of a flux is to be avoided except in those cases where it is absolutely necessary, and then only when other means of overcoming the difficulty have failed.

### SIZE OF CLAY PARTICLES.

Although many manufacturers have failed to obtain satisfactory results in the manufacture of large goods because they have not had clay of suitable composition on which to work, there are far more who have failed to work their clays to the best advantage because they have not sufficiently studied the physical properties of their clays. Thus, in the majority of sanitary works the clay is ground and passed through a certain sized riddle without anyone knowing whether this particular mesh is, or is not, the most suitable for the clay in question.

A little consideration will show that the ability of a piece of fired clay to withstand repeated changes of temperature will depend on the amount of surface of the particles which are in contact with each other, in other words, on the porosity of the fired clay. In the wet clay, on the other hand, the amount of water surface between the particles will be of

great importance in deciding the extent to which they can move over each other. Consequently, *porosity* and *plasticity*—both of which in a pure clay are referable to the size of the particles—are of fundamental importance in the manufacturing of large articles.

According to Seger the particles of pure "clay substance" are less than .0002 inch diameter, and particles of .013 inch diameter and over are entirely unelastic, and are to be designated as sand and mineral matter. These definitions have been generally recognized and adopted as standards. The manufacturer of large articles in clay must work between these limits, because he does not wish to use a plastic material more than is necessary on account of its great tendency to shrink and warp or twist in the kiln. Hence he will reduce the amount of fine grains to as low a limit as possible, and will use large grained material. At the same time a certain proportion of true clay in fine particles is necessary in order to give the material sufficient plasticity to enable the workman to give it the necessary form and shape, and to hold it together whilst it is being transported from the making shop to the kiln. Sand alone will not bind together sufficiently well for it to bear its own weight when in the shape of a bath or tank, to say nothing of the transportation to the kiln.

Baths and other large articles should, therefore, be regarded as made of non-plastic material to which some clay has been added, rather than as made of clay. Even when the fire-clay is used without admixture this definition still holds good, for, as already stated, fire-clay is much richer in silica than true clay substance, and owes its refractiveness largely to this silica.

#### WHAT IS "REFRACTORY"?

It is necessary at this point to avoid any misconception as to the meaning of the term "refractory." Pure clay substance is one of the most refractory substances known, but its efficiency in this respect when made up into articles varies greatly. Thus, pure china-clay will stand any temperature up to 1,900 deg. C. without melting, but when made into goods (a difficult matter because of its slight plasticity) the goods will not withstand sudden changes of temperature nearly so well as fire-clay, which is by no means so pure, but which is composed of coarser particles. Hence in using the word "refractory" care must be taken to distinguish between the burnt clay itself and the clay made into goods, and then fired.

Ordinary siliceous clays, such as typical fire-clays, are usually of a suitable degree of fineness when they have been passed through a sieve with six meshes per linear inch. Many makers contend that this is too coarse to "finish properly," but this is doubtful, and the use of a finer riddle (say twenty meshes per inch) will usually lead to difficulties with the clay in the kiln, unless other means are adopted for overcoming them. Thus a clay which has been too finely ground may often be used if it has been previously mixed with sufficient fine sawdust to overcome the density of the fine clay, and, by burning out in the kiln, leave an article of very porous clay. Some makers, in fact, prefer this to a clay more coarsely ground. It is running a serious risk, though to rely on the presence of sawdust to overcome the defects of an insufficiently careful grading of the clay during or after the grinding.—*British Clayworker*.

#### NEW YORK'S MINERAL PRODUCTS

New York state's mineral products yielded \$37,118,430 during the last year, according to statistics compiled by the New York State Museum. This is a gain of \$1,647,443, or about 5% over the figures of last year. In three years the gain has been nearly ten millions. These figures cover returns from 30 mineral materials now in commercial use. The iron industry shows considerable activity, the output last year being greater than at any time since 1891. There are nine mines in use now, three new ones being opened during the year.

The manufacture of clay products contributed an aggregate value of \$13,955,300 in 1906 as compared with \$14,280,016 in the preceding year. The decrease was due principally to the lower prices obtained for structural materials. The output of clay building materials (brick, tile, fireproofing and terra cotta) was valued at \$11,063,433. The number of brick made was 1,600,059,000, of which 1,230,692,000 was reported by the plants along the Hudson river. Pottery is a growing branch of the clay working industry; its share in the total last year amounted to \$1,795,008, represented mostly by the finer wares, porcelain and semi-porcelain. There were 265 clay-working plants in operation distributed among 48 counties.

The production of Portland cement in this state has increased from 65,000 barrels in 1890 to 2,423,374 in 1906.

The unprecedented demand for clay building materials which was experienced in nearly all sections of the state throughout the previous year continued to exert a favorable influence on the clay-working industries during 1906. The aggregate value of the production of clay materials of all kinds for 1906 was \$13,955,300. There were 265 companies or individuals actively engaged in the industry as compared with 250 in the preceding year. Of the 61 counties of the state, 48 were represented in the returns as having an output of clay materials. Compared with the production of 1905, which was valued at \$14,280,016, there was a decrease of \$124,716, or about two per cent. The falling off in the valuation of building brick alone more than equaled the aggregate decline.

The value of the output of common building brick for the year amounted to \$9,302,165, as compared with \$9,751,753 in 1905.

There were 22 potteries that reported as active in 1906, the same number as in the two preceding years. They were distributed among the following counties: Albany, Chautauqua, Erie, Kings, Madison, Monroe, Nassau, Onondaga, Ontario, Schenectady, Suffolk, Washington and Wayne. Onondaga holds first place in point of production, with a total for 1906 valued at \$858,270, as compared with \$718,895 in 1905 and \$673,590 in 1904. Kings county is the second largest producer, contributing an output valued at \$306,105, against \$308,443 in the preceding year and \$279,000 in 1904.

The production of clay materials in Albany county in 1906 amounted to \$675,000, an increase of about \$30,000 since 1904. The value of Reusselaer county's output was \$296,762 in 1906. The value of common building brick manufactured in Albany county in 1906 was \$261,300, as compared with \$439,238 in 1905. The value of other products of Albany county in 1906 as compared with 1905, is as follows: Crushed stone, \$6,200; 1905, \$30,800. Total limestone production, \$100,800; 1905, \$101,425.

**"IDEAL" MACHINES IN THE LEAD**

Our readers will recall an announcement a few months ago, to the effect that the Ideal Concrete Machinery Company, of South Bend, Ind., had closed up what was said to be the largest contract for concrete machinery ever secured, the contract involving \$250,000.00 worth of "Ideal" Block Machines.

From time to time we have had additional evidences of the progress of this company, and are now advised that within the past six months, they have shipped *six full car-loads of "Ideal" Machinery* into one Spanish-American country, and it may also be of interest to note that in the last shipment were included: 8 "Ideal" Continuous Batch Mixers, fully equipped with power.

With these mixers are included 2 large Sill Machines; 10 24-inch Block Machines; 6 Brick Machines, and a great many accessories and attachments were sold to one concern.

This record is not remarkable for the "Ideal" Company, and we are further advised of large orders now in hand and recently shipped to Auckland, N. Z.; Sydney, Australia; Kobe, Japan; Calcutta, India; Shanghai, China; Buenos Ayres, Argentine Republic; Rio de Janeiro, Brazil; Lima, Peru; Montevideo, Uruguay; Budapest, Hungary; Valparaiso, Chile, and other places.

The "Ideal" people sent out the most complete and comprehensive catalogues—regular encyclopedias of information—and their catalogues are fully "coded" and indicate, gross and net weight, cubic measurements, and other data particularly helpful to domestic and foreign buyers.

The great popularity of "Ideal" products is evidenced by the following letter taken from hundreds on file of similar tenor:

Minneapolis, Minn., July 13, 1907.

GENTLEMEN: A year ago last May, I purchased a Model "A" 8x8x16 inch machine and built a two-story house of "Ideal" blocks. Everyone stops to admire my home, saying it is the only concrete block house they ever saw that they admired.

I never saw a block made until I set up the "Ideal" machine you sent me. I drew my own plans and made every block and laid them up with no experience whatever in that line.

I have delayed writing you to let you know how well pleased I am with the machine as I wanted to send you a photograph of what it was possible for a man to do who has had no experience in the building line.

Building my own house has thrown me into the concrete business, and now I can hardly keep up with my orders.

Respectfully,

IDEAL CEMENT STONE & SIDEWALK CO.,  
173 Bedford Street.

The comprehensive scope and character of the "Ideal" line can only be understood by getting their catalogue. "Ideal" block machines are made in two types, model "A 16" and model "E 24." The bases of these machines are interchangeable to receive attachments for making the blocks 6, 8, 10 and 12 inches thick, also 4, 6 and 8 inches high, and any length from 1 inch to 24 inches.

Other attachments are cleverly worked out to produce all kinds of special blocks, such as octagons, circles, water tables, ornamental belt courses, caps, etc.

In addition to the special line of concrete block machines, these people also have a large trade on their "Ideal Special" Sill and Lintel Machine, for making solid or re-enforced blocks, 8 inches high, 18 inches thick and 60 inches long. The machine is also adjustable for any smaller size, in height, thickness and length, and is a very desirable adjunct to the block business for producing sills, caps, water tables, curbing, or any special ornamental designs needed.

The "Ideal" people also produce their Model "A" Brick Machine, which has jumped into popularity. Fancy faced brick are made as easily and as rapidly as plain bricks, on this clever little machine. The Brick Attachment may also be had for the Model "A" 16 inch Block Machine Sets, constructed on the interchangeable plan.

In the line of ornamental molds, such as balls, spindles, columns, lawn vases, fancy cap and belt course designs, the "Ideal" people have a most complete variety.

For the past year they have been working on a mixer, designed particularly for the needs of the concrete block manufacturer. The "Ideal" Continuous Batch Mixer is now on the market, and we are advised that before a photograph could be taken of the machine, a large number of orders were booked.

The mixer is unlike any other machine on the market, and is fully protected by patent. The materials are mixed dry in a revolving drum of peculiar construction, and by the simple action of throwing in a clutch, the drum is reversed, which automatically and quickly discharges the contents into a lower mixing trough; water is added, and the entire batch is mixed and discharged in a few moments ready for use.

While this is being done, the drum is receiving the next batch, hence the name, "Ideal Continuous Batch Mixer." The mixer is symmetrical in appearance, and is substantially built of steel and angle iron. It is operated by a two horse power engine.

Every block maker or man contemplating engaging in the business will do well to send to the Ideal Concrete Machinery Company, of South Bend, Indiana, for their primary catalogue. We are informed that with every machine sold a very large and comprehensive book of instructions is sent to the purchaser, which contains information of particular value to the users of "Ideal" machinery.

**ELOPEMENT CLOSES POTTERY**

Conshohocken, Pa.—"Don't worry, mother; Elsie and I were married on the Fourth and will be home on Saturday." This message relieved the tension in the home of two families here and brought joy to the employes of the pottery works at Spring Mill, which has been closed down for over a week awaiting the return of John Sharf, who sent the message. The groom is the son of A. Sharf, the Spring Mill potter, and is the engineer of the plant. The young man's absence served to cause a temporary shut-down of the plant and the employes will be glad when he brings home his bride.

## ST. LOUIS A LARGE PRODUCER OF CLAY

Washington, D. C.—St. Louis produced and sold about \$5,000,000 worth of clay products in the year 1905. This is approximately one-thirtieth of the entire output of the United States for that year. The Cheltenham district furnished the larger portion of the products. An attaché of the United States Geological Survey has completed a brief description of the clay resources of the St. Louis district, and from it these facts are taken.

The products include those of fire clays, dug in a single section within the city limits, and the production makes St. Louis one of the most important centers of the clay industry. In addition to fire clays the products are from shales and brick clays.

The area from which fire clays are derived has its center in a section of the city known as Cheltenham, lying south of Forest Park.

The feature to which the presence of the fire clay within the area named is mainly due is a faint synclinal basin, whose center is not far from the southeast corner of Forest Park. North and northeast of this point there are no mines. The lowest level from which the clay is mined is 404 feet above sea level.

The choicest of the clay is sold for glasshouse use. At several of the mines the clay is assorted, that which is freest from impurities being sold in the raw condition for glass pots. Good clay which contains a small amount of impurity is washed and then sold for the same purpose. For brick it is not necessary that the clay be so pure. Much of the fire clay mined in Cheltenham is used without assorting for ornamental and facing bricks, or is mixed with various other clays to make sewer pipe.

About nine miles northwest of Cheltenham and three miles east of Creve Coeur Lake the St. Louis Vitrified and Fire Brick Company operates a mine and factory. The base of the fire clay bed at this point is nearly 90 feet below the upland level. The thickness of the clay is 12 to 15 feet, 12 feet of good clay being mined. It is practically certain that this clay is at the same horizon as that mined in the city of St. Louis.

In view of the wide separation of the points at which the Cheltenham fire clay sea is mined it is quite probable that it may be found at many places where no prospecting has yet been done. A characteristic feature of the coal measures near St. Louis is its very large proportion of plastic shales. These are largely used in the manufacture of vitrified paving brick, both in St. Louis and at points farther northwest, near Creve Coeur Lake. This shale is that which appears in the sections above the fire clay, but west and north of the city it occurs in thicker and more continuous beds, of uniform quality. At Castello and Malcolm stations almost the entire 40 to 55 feet intervening between the loess and the coal seam overlying the fire clay consists of workable shale, generally of a red or broken color, but with some blue shale at its base.

Similar clays from a place four miles northwest of Glencoe, a station on the Missouri Pacific railroad about twenty miles west of St. Louis, are largely used in St. Louis in the

manufacture of terra cotta and sewer pipe, though shales from this vicinity have also been used extensively for brick. Yellow and blue shales that occupy the same stratigraphic position are extensively mined at Prospect Hill, a few miles north of St. Louis, and used in the manufacture of Portland cement, being mixed for that purpose with the St. Louis limestone.

Many yards in and around St. Louis are making red brick from the loess which is commonly called "yellow clay." This is rarely less than 10 to 15 feet thick, and near the bluffs may be three or four times that thick. It differs in texture at different depths, the upper portion being "stronger," more claylike, and less mealy than the main body.

Partly to obtain a thorough mixture of these different grades and partly to allow some weeks or months of "sweating," thus reducing all lumps, large quantities of the loess are commonly brought in from the pits and kept under shed for some time before using. A good grade of red brick is made, and the supply of good loess here and elsewhere is limitless.

## BRICK PLANT TO BE RUN BY LADIES

The How-Kim Brick Manufacturing Co., was organized recently to erect a brick plant on the Ellison farm east of Cherryvale, Kansas. A deal was closed with John Ellison for a site and several hundred acres of gas leases and an option has been closed for considerable more. The plant will be built of machinery of the most modern type and the facilities for making brick will be equal to the leading companies of this field. Construction work will begin at once, and it is expected to have the plant in operation within 90 days. The plant is on the main line of the Frisco railway and is assured excellent shipping facilities. When completed the plant will have a daily capacity of 60,000.

The industrial enterprise is unique in this respect. It is owned and managed by two ladies, Miss Helen Kimber and Miss Howard, both of St. Joseph, Mo.. The former is well known, having taught in the public schools of Labette county. Miss Kimber devoted considerable time in the interests of woman suffrage and was at one time president of the Kansas State organization. However, she soon turned her attention to more promising pursuits, financially, and as one of the leading business women of the west. Both she and Miss Howard are splendid examples of the successful women in business and they are demonstrating to their sisters that mere man is not a necessary adjunct to a successful business career and that success in business is not confined to men only.

These women have engaged in a number of business enterprises before and have always been successful. They own 1,600,000 acres of land in Mexico across the Arizona boundary line. This tract of land is 97 miles in length. This country is developing and this land will make its owners amazingly wealthy some day. The How-Kim brick plant starts out with every prospect of success and thus another industry is added to Cherryvale's already big list, but still there's room.—*The Cherryvale Daily Republican*.

A paper read before the twenty-first annual convention of the National Brick Manufacturers' Association of the United States of America, St. Louis, February 4-9, 1907.

### THE NEED OF THE HOUR

C. B. PLATT, VAN METEER, IOWA.

In considering this subject I find that it insists on presenting itself in the plural. Clayworkers seem to have *needs* rather than *particular* need.

I feel that you will all overlook any introductory history of clayworking which I may omit in this paper.

I trust also that you will forgive me if I fail to be interesting or to throw any new illuminations upon the screen of the clayworker. Success loves the sound of its own story, but probably even the most success-seasoned clayworker present has tired of being told of the step-burdened process of producing clayware. It may be even his eyes would brighten in anticipation of new fields to occupy and conquer, could evidence be shown that the clayworking process was to soon start at the burning end and finish with the forming. Unfortunately I can not inspire this interest. It is said, however, that Thomas A. Edison has appreciated this need, so there is hope.

That clayworking is so generally successful is due wholly to the fact that clayworkers, as difficulty-overcomers, are the real thing. Born to conquer, they wrest from one of the most wasteful manufacturing processes on earth, a competence and a fortune. Though immersed in a flood of waste they pass safely through and camp triumphantly on the shore of success. Waste is not usually of their making, but has been handed down from generation to generation.

Clayworking has many examples of most admirable business generalship; examples which are not confined to the most prominent. Some very tall oaks have grown from rather small acorns. Undismayed by repeated backsets in the journey from a daily production of ten thousand to a capacity swelled to meet the demands of a building-mad market, to-day sees the triumphant brickmaker perched upon that sun-kissed pinnacle of production—500 bricks a minute from the one manufacturing unit.

The brickmaker has passed with unshaken nerves through the experience of meeting in his field of competition the material which can be "made today, laid in the wall tomorrow;" he has not lost his nerve in this the "cement age," though appreciating the possibility that every fireside has within its reach a cement block factory, and he still pushes to the front with the product that will not be downed—burned clay. He recognizes, however, that these competitive materials have a place in the market, based on more or less merit, and that whatever the degree, it is taken from the clay-working field.

Urgent market demand is not always the cause for the birth of an industry. The establishment of some six thousand clayworking plants in this country has not been due entirely to urgent market demands. Thousands of dollars have been planted in this industry unbacked by market and fathered by only the slightest knowledge of the materials or the general process of manufacture. This is because clayworking is supposedly a seventy-five per cent profit proposition,

in which there is room for waste and a chance to develop a knowledge of the business. All this is naturally conducive to an effort to get the business down to a basis of scientific economy, or a recognition of the real margin or profit.

The need of the hour is, beyond doubt, economy. Economy effected merely through operating speed, while in some instances eminently satisfactory, is not available throughout the field. Should all attempt speed economy there is no question but the need of the hour would soon be a market.

There is room for doubt as to the economy to be derived in departing from a production of twenty thousand daily, with its modest equipment requirements and simple drying methods to the intermediate point of production in the forty thousand daily capacity with its more extensive equipment requirements and its added administrative expense. Economy gained through increased capacity is not in direct proportion to the increase. The plant with a daily capacity of twenty thousand, or there about, having as it does at this time, means of effecting the most economical drying, through the use of natural dryers equipped with elevating truck systems and not burdened with heavy equipment cost and large administrative expense, is best qualified to effect economy of operation.

Since the economy of speed and continued operation is only available to those situated in large demand markets, the majority must look for greater economy and greater profits through a saving of waste. Waste is most marked in the production and use of power and in loss of heat in burning operations. Engineers believe that steam engineering has accomplished practically all that can be accomplished in the conserving of heat units in fuel burned under steam boilers. Be this as it may, the development of power through the agency of the steam boiler and its application through the steam engine is a wasteful process. Steam power plants, particularly of comparatively small rated horse power are seldom well managed, generally poorly equipped and a constant source of danger, delay and expense.

When available at reasonable rates, electric power is an attractive substitute for steam, in that it gives no concern or expense except during active plant production.

The gas engine, operated with producer gas, is a satisfactory and economical substitute for steam, available in all cases.

This system of developing and using power is worthy of careful consideration, regardless of any failures which may have been made in its use in this country. It is probably true that poor results are attributable largely to faulty installation or to poor system. We know that producer gas engines are being successfully used in Europe and in electrical power plants in America. Americans are growing somewhat shy of new sure thing propositions, that is, some Americans, which is well, particularly in certain lines, but when we find that entirely responsible concerns in America are taking up the manufacture of suction gas producers and gas engines and selling such plants under positive guarantees, both as to efficiency and reliability, we should give ear to their claims and seek through this agency a means of saving a most marked waste in power plants.

The saving effected in the suction gas producer plant is accounted for through comparison as follows:

"Some of the advantages of a suction gas producer and gas engine plant over steam are higher efficiency, greater compactness, fewer auxiliaries, less attendance and fuel, no smoke, no pressure, no condensation, no heavy stand-by losses, no danger, no smokestack, the sum of which means cheaper, more reliable and more satisfactory source of power.

"In actual practice the average thermal efficiency of a steam plant of 100 h. p., with varying load, is three to five per cent. With a gas engine and suction producer plant the efficiency is sixteen to twenty-five per cent, or in other words, a steam plant of 100 h. p. or under, will use six to ten pounds of coal per h. p. hour while a producer plant will use but one to one and three-fourths pounds.

"This great reduction in coal consumption is due to, first, higher efficiency in the producer than in the boiler; second, very much higher efficiency in the gas engine than in a steam engine, and third, the absence of condensation losses between producer and engine. The efficiency of a suction gas product is seventy-five to eighty per cent. while that of a small steam boiler is fifty-five to sixty per cent. The efficiency of a small steam engine is only about six per cent instead of twenty-five to thirty per cent as given by a gas engine.

"The very best thermal efficiency obtainable in a triple or quadruple expansion steam plant does not exceed sixteen to eighteen per cent, while with the gas engine and producer plant a combined efficiency of almost double this may be obtained, even in medium and small sized units."

The comparison is still more in favor of the gas engine when we have to take into consideration poor water supply, which condition is so conducive to repair and stoppage losses, to say nothing of greatly reduced fuel efficiency.

In the matter of first cost, the gas engine producer plant suffers somewhat in comparison with steam. A producer gas engine plant up to two hundred h. p. as required in brick plants, would cost approximately \$65.00 per horse power. This higher cost is not of much importance, however, when we find that responsible manufacturers of the gas engine equipment guarantee an earning on the investment of thirty per cent through fuel saved.

Clayworkers are sometimes advised to install plain side valve engines in order to utilize the waste or exhaust steam in drying their wares. The drying of ware with exhaust steam is, of course, commendable when the installation has been made, but at best it is unreliable and only partially economical since practically half of the drying period is under live steam conditions. Clayworkers in the north have found steam dryers a source of much annoyance during the winter months and a source of much expense as well. There is no economy in creating a waste in order to use it. Steam use in drying is most economically demonstrated in driving fans for a kiln waste heat dryer. There seems to be no objection to steam in that case, provided no other power is available, and as long as it is necessary to use the surplus heat from kilns.

Waste heat from kilns should be utilized where created and through natural draft forces, such as are present in well planned continuous kilns. The time is without doubt fast ap-

proaching when the successful operation of the producer gas fired continuous kiln will bring it recognition as the most desirable instrument with which to effect economy in burning. Producer gas as a kiln fuel is perhaps not as yet fully demonstrated as valuable, except in a well constructed continuous kiln. Experiments have been made with this fuel in down draft kilns which may not have proved any particular economy in its use, but these experiments were made under quite different conditions than maintain in a well planned continuous gas fired kiln and should have little influence in a decision for or against the continuous gas fired kiln.

The point most favorably affecting the novice, inspecting the operation of the continuous gas fired kiln, are, first, ease with which the heat is generated, maintained at stated temperatures and directed to any part of the burning chamber; second, cost of fuel and attendance per thousand brick and convenience in loading and unloading.

In connection with electricity driven machinery, or with producer gas power, the gas fired continuous kiln and the direct heat radiating dryer offers an ideal proposition for the waste-weary brickmaker. The direct heat radiating dryer has in it much to commend it in that it is always ready to do its work, one track or all, winter or summer, rain or shine, and it does not cost a cent while not in operation. Satisfied users of this system state that they are drying brick at a cost of fifteen to twenty cents per thousand.

The questions of applied economy have to deal with a wide variation of conditions. There is a very wide variation in product, in raw materials, in market conditions and in financial ability. There is, therefore, no plan that will be suited to all.

Steady operation, either during a limited period or throughout the year, under the minimum waste in the use of fuel, is the point toward which to work. The one question in this connection is, where is the demand point when it becomes advisable to give up the moderate equipment of the small capacity plant for the more expensive and complicated equipment required for the year around plant.

This point can only be satisfactorily settled through a complete acquaintance with local conditions and through, mature business judgment.

## CANNOT EXCAVATE HAVERSTRAW STREET

New York City, N. Y., July 9.—Additional efforts were made by several citizens of Haverstraw to prevent the further excavating of the land in and about what was once Jefferson and Rockwell streets, so as to avert a repetition of the landslide of last year, before Justice Morschauer.

An order to show cause why a permanent injunction should not be granted restraining the brick manufacturers from excavating was recently granted by Judge Fallon, which was made returnable at once. It was contended that the people living in the vicinity of those thoroughfares were in constant fear of their lives and that the village officials should protect them.

Attorneys for the brick men applied for an adjournment to July 22 at Poughkeepsie for argument, which Justice Morschauer granted, but the matter was accompanied with an injunction restraining the land owners from excavating until the question is finally disposed of.



## ARTIFICIAL DRYING

Foremost among the latest clay working improvements and one which has had more to do with the success of the up-to-date brick-making industry has been the introduction of the "Martin Patent System" of Artificial Steam Brick Drying. This "System" is one that is causing genuine surprise among the craft on account of its simplicity as compared with the results obtained.

Many brick-makers have hesitated to consider the instal-



lation of a brick dryer on account of the first cost, the extensive equipment of rolling-stock and the cost of operation and maintenance. The new "Martin Patent System" referred to is presented as a economical method of drying either stiff-mud or soft-mud building bricks, as all cars are dispensed with; there are no tunnels, fans or other equipments of this kind to be kept in repair, and at the same time the brick are thoroughly dried over night. The brick made one day are ready to set in the kilns the morning following.

The heat used in this dryer is furnished by steam circulating through special designed coils of pipes, these being supported by heavy cast iron columns. The buildings necessary to cover the drier are inexpensive as the driers are so constructed that the roofs can be attached to the driers themselves.

The "Martin Patent System" is practically fire proof, no woodwork being used in its construction whatever.

Another valuable feature noticeable in this new "System" is that of handling the brick into the driers by the cable conveyor; this conveyor handles the green brick direct from the machine into the drier with a great saving of labor and the most satisfactory results. This conveyor also takes the brick after they are dried to the kilns—making the work a continuous one.

With this new "Martin Patent System" the brick-maker is made independent of the weather or seasons.

The sale and construction of this "Martin Patented Sys-

tem" is under the supervision of the factory office at Lancaster, Pa., and the manufacturers and owners of these important (patents) have authorized no one to sell or construct "Martin Patent System" Rack Pipe Steam Brick Dryer, and it is to your interest to consult The Henry Martin Brick Machinery Mfg. Co., Inc., if interested in handling or drying brick in the most economical manner.

The illustrations shown herewith are views of the Union Brick Co.'s plant at Shamokin, Pa. This plant is a 30,000 daily capacity plant. Cut No. 1 shows the interior of dryer building, cable conveyor, etc., and cut No. 2 shows the interior view of the kilns, showing the setters, and man tossing the brick from pallets. As soon as the six bricks are tossed off the pallet he places the empty pallets on the under cable, on which pallets travel back to the brick machine. You will note that this is decidedly labor-saving and dispenses with the truckers and wheelers, and that the plant is thoroughly practical automatic throughout.

## MAKING LIBRARY FIREPROOF

Up to date 320,000 square feet of terra cotta hollow tile has been supplied by the National Fireproofing Co. for the New York Public Library at Fifth avenue and Forty-second street. It is the aim of the architects to make the new library a perfect type of the absolutely fireproof building.

Of the 320,000 square feet of hollow tile already supplied



237,000 feet are for floors, 20,000 for partitions, and 54,000 are book tile for the roof. There is still a great deal more of the fire-resisting material to be supplied, for column covering, furring and more partitions. It will probably be used also, in connection with the steel bookcases. These bookcases will have 63 miles of shelves and will hold about 3,500,000 books. There is to be nothing about the structural part of the building itself which can burn, and if a fire should start in any room or hallway the fireproof partitions and floors would keep it from spreading.

# WANT U. S. BRICK COMPANY'S BOOKS EXAMINED

Twenty-two minority bondholders of the United States Brick Works attended an interesting meeting at the Board of Trade rooms at Reading, Pa., to protest against the exchange of their bonds for preferred stock.

Among those present were Peter D. Wanner, who appeared for Josiah Thompson and other Philadelphia investors holding bonds of over \$40,000; Wm. C. Billman, Jeremiah Auge, Jacob Barbey, Charles Grainger, A. S. Deeter, John J. Sailer, Philip Von Neida, George Appel, Charles W. Yocum, Frank C. Hosley, Harry M. Albright, Ira P. Rothermel, Jacob B. Fricker, Harry F. Kantner, Howard L. Boas and others.

On motion of Mr. Boas, Wm. C. Billman was chosen chairman of the meeting. This was seconded by Harry M. Albright.

"Are there any stockholders present who wish to join this minority movement?" asked Mr. Billman. "If there are, let them step forward and enroll."

Charles Grainger, Klopp & Kallbach, of North Heidelberg; Jeremiah Auge and Philip Von Neida complied with the request.

Next Jacob B. Fricker, of the minority committee, read the following statement:

"Gentlemen: Before submitting our report as a committee of the minority bondholders of the United States Brick Company, we beg to say that many holders of these bonds, some of whom signed the agreement proposed by the bondholders selecting the trustees, do not appear to have a proper conception of the plan of exchanging their bonds for preferred stock. In order that all bondholders as well as the public may clearly understand the situation and that erroneous impressions and unfounded rumors may be corrected, we deem it proper that facts should be made known setting forth clearly and truthfully the situation. Therefore, we make the following explanation:

"The Montello Brick Works was organized under the laws of Pennsylvania. It leased the property of the Montello Brick Company, which had been previously organized. This property consists of a large brick plant at Montello, for which the Montello Brick Works agreed to pay an annual rental of \$63,000, being 6 per cent. on the \$1,050,000 of preferred and common stock of the Montello Brick Company. It also erected the fine plant at Wyomissing. The Montello Brick Works issued \$500,000 of preferred stock, the stockholders of the Montello Brick Company having a preference in making subscriptions, and \$1,000,000 of common stock, on which no dividend was to be paid until the preferred stockholders were paid their semi-annual dividends of 3 per cent. Five hundred thousand dollars was paid in in actual cash for the preferred stock. The subscribers to preferred stock were given a bonus of one share of common stock for each share of preferred stock taken by them.

"The directors of the company being satisfied that Mr. Gery was the owner of valuable improvements and patents, and he having clearly demonstrated at his own expense, which was quite large, the great saving and improved quality of brick manufactured under his devices and burned in his patented kiln,

# IMPORTANT ACTION TAKEN IN CONVENTION AT EAST LIVERPOOL

East Liverpool, Ohio, July 13.—Propositions to increase the wages of mold-makers five cents a day; pressers, casters, stickers-up, 15 per cent.; increasing the salary of President T. J. Duffy to \$1,600, and of Vice President Frank H. Hutchins of Trenton, N. J., to \$1,400, were prominent among the resolutions adopted by the National Brotherhood of Operative Potters, Friday.

The election of president and first vice president by a vote of the trade instead of by delegates in convention and the salary question are two propositions that will be referred to the trade before either became operative. An increase in the price of making certain pieces of ware was approved. The amounts vary from 10 to 25 per cent.

A resolution, having for its object the demand for an increase of ten per cent. in the pay of jiggersmen and dish-makers, engaged at making white granite, was introduced. The same resolution contained a clause which places a ban upon C. C. ware in the future. The latter portion of the resolution was adopted and that which went before met defeat. Nearly the same regulations and prices at present govern the making of both classes of ware, and the adoption of the measure will not work any great hardship upon the manufacturer.

An effort was made to establish a "hard and fast" regulation in the kilnshed with regard to the carrying of ware from the green room. It was shown that the conditions in these departments of a great majority of the pottery plants are entirely satisfactory, and the resolution was rejected.

The employes of many of the larger pottery manufacturing concerns now enjoy a half holiday Saturday. A resolution was presented at the session today making the rule a general one, and also to require the firms to pay weekly at noon Saturday. A number of isolated companies pay their employes by check, and by the time the workers have had time to get to the banks the doors were closed. The resolution was adopted.

Mold makers who are called upon to block and case were supported in a resolution providing that an increase of wages be given them. The mold makers are now receiving \$3.50 day wages, and they will ask \$4.00. A measure went through providing for a figure of one-fourth cent for stamping ware.

The matter of forming a uniform price list for the making of china ware was left in the hands of the executive board, the members of which will take it up soon after the adjournment of the convention.

A demand to be made for increase in the pay of workmen producing plain edge ware. Plates are to be advanced one-half cent per dozen, while one-fourth cent will be demanded on saucers, fruits, and ice creams. The jiggersmen will be benefitted if the demand is acceded to.

Dippers both east and west have been endeavoring for a long time to readjust the apprenticeship controversy in their trade. A resolution went through providing for an alteration. Under its regulations ten per cent. will be retained by the firm from the wages of all apprentices receiving \$3.50 per day for their first three years, the journeymen to receive the benefit.

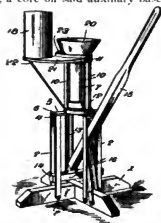
## CLAY RECORD.

## NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

852,101. Tile-Machine. Loron O. Burnham, Clare, Mich. Filed June 22, 1906. Serial No. 322,933.

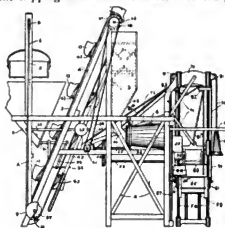
Claim—A machine of the class described comprising a base, standards on said base, an auxiliary base secured to said standards, a core on said auxiliary base, bars disposed



around said core and at a distance therefrom, means to secure said bars in position around said core, a shelf at the upper end of said bars, a hopper pivotally secured to said shelf, a casing between said bars and surrounding said core and means to elevate said casing whereby the plastic material may be removed from the core.

852,579. Block-Making Plant. Herbert G. Rounds, Bay City, Mich. Filed July 11, 1906. Serial No. 325,739.

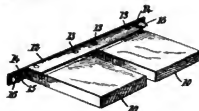
Claim—A block molding plant comprising a conveyor, a receptacle, a chute leading from the receptacle to a point adjacent the conveyor, gates in the chute controlling the passage of the contents of the receptacle to the conveyor, independent tripping mechanism connected to the gates, the



conveyor adapted to trip the mechanisms successively to receive a measured charge, a stationary mixer to which the material is conveyed and through which it passes in a dry state, a rotary mixer into which the material is discharged from the stationary mixer, a liquid discharging pipe leading into the rotary mixer, a swinging carrier into which the rotary mixer discharges, a suitably supported form into which the carrier discharges its contents and pressing mechanism actuated by the conveyor mechanism for compressing the material in the mold form.

853,086. Brick-Supporting Pallet. Bernard Jacquart, South River, N. J., assignor to American Enameled Brick & Tile Co., New York, N. Y., a Corporation of New York. Filed June 11, 1906. Serial No. 321,242.

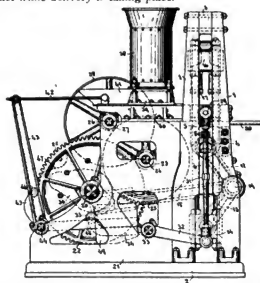
Claim—The combination of wooden boards provided with comparatively thin ends, and channel irons mounted upon said ends and secured thereto, said channel irons being provided with ear pieces, the latter being secured directly to the edges of said boards.



The combination of boards, and channel irons mounted thereupon and provided with oppositely disposed portions engaging oppositely disposed portions of said board, said channel irons being further provided with ear pieces and with projections extending laterally from the said ear pieces and engaging the edges of said board.

852,934. Brickmaking-Machine. Orvis G. Diefendorf, Watertown, N. Y. Filed July 14, 1906. Serial No. 326,250.

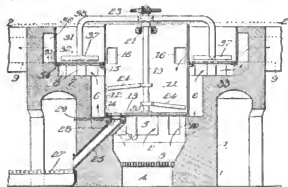
Claim—A machine of type described, comprising a mold and bottom and top plungers, in combination with means for operating the mold and plungers relatively to one another, whereby, after the bricks or blocks have been formed in the mold, they will be delivered from the bottom thereof, means whereby a pallet, or other conveying device, may be inserted below the mold after separation is effected between the mold and the bottom plunger, and means for causing the pallet or other conveyor, to contact with the contents of the mold as they begin to issue therefrom and to maintain said contact while delivery is taking place.



In the machine of the type described, the combination with a movable mold and a reciprocating cross-head carrying one or more top plungers, said mold and cross-head being guided at each end in guide-ways provided therefor in upright standards, of a cross-block carrying one or more stationary bottom plungers positioned below the mold and having its ends slidably mounted in said guide-ways, adjusting screws rising from the standards below the cross-block and engaging the ends thereof, whereby the cross-block may be

raised and lowered and rigidly fastened in order to properly position the bottom plunger or plungers with relation to the mold, a toggle hung from the under side of said cross-block, connections between said toggle and the reciprocating cross-head and means for imparting motion to the toggle and to the mold substantially as herein set forth.

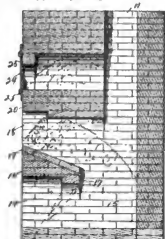
852,616. Gypsum-Burning Kiln. Friedrich Raithel, Wundtsheim, Germany. Filed Dec. 15, 1906. Serial No. 347,974.



Claim.—A gypsum burning-kiln, characterized by the kiln being constituted by two heaters, of which the main heater arranged directly over the combustion chamber is deeper than the other or auxiliary heater and passes through the latter in such manner that the auxiliary heater with which the escaping combustion gases come into contact, forms an annular chamber round the main heater.

853,130. Fire-Box for Kilns. John F. Slater, Avoca, Iowa. Filed Sept. 5, 1906. Serial No. 333,722.

Claim.—An improved fire-box for kilns, comprising inclosing walls forming a combustion chamber, a flue communicating therewith, said chamber having at its front an upper and lower opening and having between said openings a solid platform inclined downwardly and rearwardly from the bottom of the upper opening.

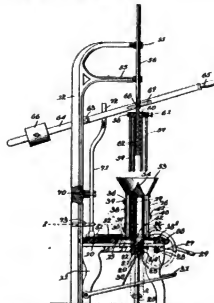


In the fire-box for kilns, the combination of inclosing walls forming a combustion chamber having a fuel opening at its front and an ash pit opening at its front below the fuel opening, an arch above the ash pit opening, extending to a point near the center of the combustion chamber, a solid brick platform extending from the bottom of the fuel opening downward and rearwardly and supported by said arch, an arch above the fuel opening, extending rearwardly above the combustion chamber further than the said inclined platform, and a supplemental arch projecting below said latter arch with its front edge above the central portion of the

inclined platform, and a flue communicating with the combustion chamber.

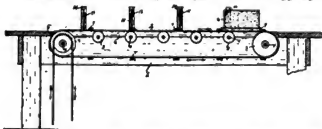
852,839. Machine for Molding Plastic Material. Henry H. Howell, Hope, Ark., assignor of one fifth to William C. Wilson, Brice, Ohio. Filed July 19, 1906. Serial No. 326,900.

Claim.—The combination with a mold box, of a reciprocatory tamping member, a manually operable actuating lever, therefore, the lever having a variable stroke governed by the quantity of material in the mold box, and the force of the tamping below, and means actuated by said lever for imparting to the mold box a step by step rotative movement proportioned to the stroke of the lever.



In combination, a table having an opening for the passage of a core, a mold box supported on the table, a core carrying bar, a core mounted thereon, means for guiding the bar, a pedal connected to the bar, a shaft, means for supporting the same, a pair of lifting segments carried by the shaft, and flexible connections between said segments and the bar.

854,823. Process of Manufacturing Roofing-Tiles. Richard Hedrich, Milwaukee, Wis., assignor to Martha Hedrich, Milwaukee, Wis. Filed Aug. 20, 1906. Serial No. 331,252.



Claim.—The process herein described of manufacturing roofing tiles consisting first, in forming plastic clay into blocks, the vertical sides and ends of which conform in shape to the desired shape of the sides and ends of the tiles when made; second, severing such blocks transversely to the vertical sides and ends into a plurality of thin pieces by a plurality of cuts and permitting the pieces thus formed to fall back upon each other leaving the general contour of the severed blocks unchanged; third, removing the several pieces thus formed with their relative position undisturbed and drying and firing the same in a suitable kiln together; and fourth, separating the several pieces thus formed from each other.

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No. 1

"I like to read American advertisements. They are to  
themselves literature, and I can gauge the prosperity of the  
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the  
very time that advertising should be the heaviest. Ninety-nine  
out of every hundred merchants advertise most when there is  
least need of it, instead of looking upon advertising as the pan-  
acea for their business ills.—John Wanamaker.

Subscribe for the CLAY RECORD today.

Your shadow and your flannels may shrink, but your  
debts never.

Most of a man's troubles are ahead of him and travel so  
fast that he never catches up with it.

Many a man has been forced to ask for a handout because  
he was unable to get his hand in.

Remember, young man, if you are not satisfied with your  
job, the chances are that the boss will not refuse to accept  
your resignation.

One reason why so much has been accomplished during  
the past one hundred years is that the men who have done  
the accomplishing wasted no time doing up their hair.

The CLAY RECORD is the only semi-monthly clay journal  
in America that is printed twice a month. You can receive  
it one year for the sum of one dollar. Don't delay sending  
for it. Delays are dangerous. If the value is not in it for  
you at the end of the year we will willingly refund your  
money. Subscribe now!

## BUILDING OPERATIONS FOR JUNE

Official building reports from some fifty of the leading  
cities of the country, received by the American Contractor,  
Chicago, and tabulated; show in the aggregate value of  
building permits printed in June, 1907, as compared with  
those for the corresponding month of last year, very nearly  
equal, the losses slightly predominating. Some cities show  
astonishing gains and others equally remarkable losses. This  
is largely due to the issuance of large single permits during  
June, 1906. For the most part the construction business  
of the country is moving forward in an orderly, conservative  
and highly satisfactory manner, the total reported loss being  
a very small fraction of one per cent. When the immense  
amount of building done last year is taken into account. This  
must be regarded as indicating that our present large opera-  
tions are quite normal and may well be expected to continue  
since the freely predicted reaction has not materialized.  
The following figures show the percentage of gains in lead-  
ing cities: Birmingham, 68; Bridgeport, 76; Chicago, 9;  
Chattanooga, 214; Denver, 7; Detroit, 58; Evansville, 57;  
Harrisburg, 41; Indianapolis, 124; Louisville, 17; Minne-  
apolis, 45; Nashville, 37; Omaha, 18; Pittsburg, 11; Spo-  
kane, 442; Salt Lake City, 667; Topeka, 167; Tacoma, 104;  
Washington, 13. Losses are indicated by the following fig-  
ures: Buffalo, 34; Cleveland, 16; Dallas, 33; Duluth, 39;  
Grand Rapids, 36; Hartford, 9; Kansas City, 46; Los Ange-  
les, 36; Milwaukee, 47; Mobile, 73; New Haven, 39; New-  
ark, 10; Greater New York, 9; Philadelphia, 11; St. Louis,  
33; St. Paul, 29; Syracuse, 34; Toledo, 9. A gain of 9 per  
cent. in Chicago and a loss of only 9 per cent. in New York  
shows the great regularity of building operations.

## SAND-LIME BRICK

The manufacture of sand-lime brick is rapidly becoming  
an important industry in the United States and is likely to  
be as profitable here as it has been in Germany for the last  
ten years.

A sand-lime brick is essentially a mass of sand cemented  
by hydrous lime silicates. The bricks can easily be made  
with a crushing strength of over 4,000 pounds per square  
inch, exceeding in this respect some sandstones, and a ten-  
sile strength of over 200 pounds per square inch, and they  
withstand severe freezing, thawing, and fire tests. When  
made with pure sand their color is white, but by the addi-  
tion of manganese or graphite in varying proportions, gray  
or pink brick may be produced. Both common and front  
bricks are made. Their chief merits seem to be their white  
color and their somewhat lower cost of manufacture than  
that of clay or shale bricks used for building fronts and for  
ornamental purposes. It is claimed that they make rigid  
structures and that they are in every way safe and satisfac-  
tory as building material.

A brick plant for making sand-lime bricks, near Sayreton,  
a village just north of Birmingham, Ala., is briefly described  
in a paper by Charles Butts in the annual economic bulletin  
(No. 315) of the United States Geological Survey for the  
year 1906. The paper includes a list of publications dealing  
with the subject of sand-lime bricks.—U. S. Geological Sur-  
vey Bulletin 290.

## OBITUARY

G. F. Sperry, owner and manager of the Ludington, (Mich.) Brick works, died suddenly of heart disease. He was 50 years of age, a Mason and highly respected citizen and is survived by a widow.

John Mills, Jr., aged 66 years, formerly a well known brick contractor of the east end, Pittsburgh, Pa., died. His death was due to the infirmities of age. His father was for many years engaged in the manufacture of brick and the son learned his trade.

## FIRE! FIRE! FIRE!

The Corse Brick Works at Saugerties, N. Y., were badly damaged by fire.

The Algona (Iowa) Brick & Tile works was damaged to the extent of \$2,000 by fire. No insurance.

The brick plant of John M. Kennedy, Ontario and C streets, Philadelphia, Pa., was damaged by fire to the extent of \$1,000.

A \$10,000 loss by fire was caused at the plant of the Versailles Fire Brick works at Versailles, Mo. The plant will be rebuilt at once.

Four buildings of S. A. Barnes & Co., brick works at Rochester, Pa., were destroyed by fire causing a loss of \$30,000, partly insured.

The plant of the Bond Sandstone Brick Co., Lake Helen, Fla., was damaged to the extent of \$8,000 by fire. Rebuilding will be commenced at once.

The plant of the Rochester (N. Y.) Composite Brick Co. was completely destroyed by fire causing a loss of \$50,000, which is covered by insurance.

The plant of the Richlands (Va.) Brick Co., was destroyed by fire causing a loss of \$25,000. \$4,000 insurance. Fire started in the engine room.

The Kempff Shale Brick Co.'s works at Thirty-first and Wyoming streets, Kansas City, Mo., was damaged by fire to the extent of several thousand dollars.

## BRICK CHEAPER IN CHICAGO

Chicago, July 12.—The price of brick in Chicago has eased off considerably during the past fortnight, although it is stated that the manufacturers are not in any danger of experiencing a repetition of last year's ruinous competitive war. The present uneasiness is due to two causes, the customary midsummer lull in demand and the fact that all the brick-making plants are running.

The shortage of brick which existed in the spring, when prices were advanced to \$7 a 1,000 and a premium was being paid for spot delivery, has been eliminated, and there is now a surplus. Manufacturers still are quoting the market for common brick at \$7, but sales are being made as low as \$6. The latter price is the minimum, however, and there seems to be an understanding that it shall not go below that figure, although the producers deny the existence of an alliance.

It is expected prices will move upward rather than the contrary. The fall season is near and the prospects are for increased consumption. All the brick-making concerns will earn satisfactory returns on their capitalization this year, but it will require a large portion of these proceeds to recoup the losses of 1906.

## ACCIDENTS, DAMAGES AND LOSSES

Charles Carey, a boy working in a brick yard at Utica, Ill., was caught in the machinery and instantly killed.

Mike Bolick, an employee of the Robinson Clay Products Co., Akron, O., had his arm crushed off in a clay pit.

A bill in equity has been filed against the Hall Pressed Brick Co., Duquense, Pa., and H. C. Miller has been appointed receiver.

William McClintock, superintendent of the terra cotta factory at Elsinore, Cal., was drawn into a machine and seriously injured.

All McCord, an employee of the Nebraska City (Neb.) Brick Co. plant was struck by a broken belt and injured badly. He will recover.

The paymaster of the Excelsior Terra Cotta Co., New Brunswick, N. J., was held up but the pay-day was changed and the robbers got left.

The Des Moines river has broken all records for high water, brick plants along its banks have suffered great damage from Boone to Des Moines.

C. Droppa, who runs the dry pan at the plant of the Streator (Ill.) Paving Brick Co., had his leg broken by a chunk of clay falling upon same.

A petition has been filed to have Ben M. Holland of Moline, Ill., a brick manufacturer, declared a bankrupt. The claims against him approximate \$10,000.

Fred Jaquay, a boy, met a horrible death in the East Brookfield, Mass., plant of the New England Brick Co., by being knocked from the team he was driving into a mixer.

Alderman Arthur Lanlaugh of Hastings, Mich., was arrested for receiving stolen property and selling for junk the burners of the Zealand Brick Co.'s plant at Cloverdale.

Robert Todd, a laborer at the plant of the Standard Vitrified Brick Co., Coffeyville, Kansas, was caught in a cave-in in the clay pit and one leg was broken and otherwise injured.

F. S. Bachus, managing owner of the Gifford (Idaho) Brick Co., fell 22 feet into a cistern and received a crushed and broken leg. The bones were driven entirely through the foot.

## SHORTAGE IN PAVING BRICK PARTLY DUE TO INABILITY TO GET MEN TO HANDLE THEM

Edward Rodgers of the Alton (Ills.) Paving and Building Brick Co. says that his plant is being handicapped by scarcity of labor. The supply of paving brick is being cut short necessarily because of trouble in getting them out after they are made. The plant is running only one-half its capacity most of the time and occasionally it becomes necessary to shut down until the accumulated bricks can be got out of the way. With plenty of labor there would be no brick shortage as the plant has a capacity for furnishing all that are needed.

The East Alton tile works is suffering from a similar trouble. John Koch, head of the tile works, said that labor is so scarce the plant can hardly be kept going and is running about half capacity.

### THE ARKANSAS COMPANY WILL GET ITS MEN

The board of commissioners of the state penitentiary held a special session for the purpose of taking action upon the resolution adopted at the previous meeting of the board when it was resolved to carry out the provisions of the Arkansas Brick and Manufacturing Company's contract, known as the Dickinson contract. According to the company's contract it is entitled to 300 convicts, which number it has never received, according to its claim. The object of the meeting was to consider this claim and the result was that a resolution was adopted instructing the superintendent to furnish the men in accordance with the contract.

The resolution was opposed by Attorney General Kirby and Auditor Moore, and it was not until after a spirited discussion that it was adopted. Attorney General Kirby held that the amount received from the contracting company was insufficient to pay for the maintenance of the convicts and that the state had to pay for their maintenance and had to wait from one to three months to get its expense money back.

The resolution that provoked the discussion was as follows:

"Whereas, The state of Arkansas by its contract, dated July 31, 1890, agrees to furnish to the Arkansas Brick and Manufacturing Company the labor of 300 able-bodied convicts per day for a period specified therein; and

"Whereas, Said company has complained to the board that the full amount of labor called for by the contract is not being furnished to it by the superintendent of the Arkansas penitentiary; therefore, be it

"Resolved, By the board of Commissioners of the state penitentiary that said superintendent be and is hereby authorized to furnish to said company the labor of 300 able-bodied convicts per day as required by said contract."

To this resolution Attorney General Kirby offered the following substitute:

"Resolved, That only such men as are sent to the penitentiary from the courts and as they can be spared from the farm and as they can be spared from the Reeves contract be now furnished on the Arkansas Brick and Manufacturing Company's contract."

### \*RINGLINGS LET A BRICK CONTRACT

Col. A. G. Ringling, manager of the circus to locate winter quarters two miles south of Collinsville, I. T., has closed a contract with the Collinsville Brick and Tile company, for two and a quarter million brick to be used in the construction of their buildings. The contract provides for a half million brick to be on the ground not later than September 5, and the entire amount to be ready for use on or before November 1.

William J. Pattison has agreed with the brick and tile company to haul the brick and has given a bond in the sum of \$10,000 that he will carry out the contract.

Judge G. W. McClelland, manager of the brick company, said that Ringling brothers would probably use in the neighborhood of five million brick before their immense winter quarters reached completion.

### POTTERS AGREE TO COOPERS' DEMANDS

William Burgess has returned to Trenton, N. J., from the summer meeting of the United States Potters' Association, which was held in Pittsburgh. During the convention Mr. Burgess made a detailed report of the war he has waged against importers, and when he was through the convention unanimously endorsed all he has done. He was highly complimented on his conduct of the many intricate details of the prosecution which resulted in a victory for the American manufacturers.

Labor matters were not formally discussed at the meeting but an informal consideration of them showed that generally the labor situation in the pottery industry is satisfactory between the men and employers. It was the general impression at the meeting that the executive committee of the association and the labor bodies are understanding each other better at this time than ever before.

The matter of advanced prices of packing cases sold to potters by coopers for shipments of ware was discussed and it was concluded that the increases of the coopers in the West are justified by the increased cost of the materials. It was decided by the potters to continue to get their cases from the coopers, instead of establishing coopeage plants in connection with the potteries.

To meet the increased cost of the cases the convention passed a resolution advancing the price of packed cases just enough to cover the increase.

### BIG ORDERS ARE SECURED BY TWO COMPANIES

The Pittsburg-Buffalo Co. next week complete an order for 3,000,000 brick for the Carnegie Steel Co. used in the erection of two blast furnaces at Rankin. The company has booked the following orders: For Greensburg, 1,500,000; Meadville, 1,000,000; Oakmont, 500,000; Clarion, 500,000; Canonsburg, 750,000. In addition, the company is filling orders in Boston, New York, Philadelphia and other eastern cities aggregating fully 5,000,000 brick.

The sewer pipe and brick plants of the Pittsburg-Buffalo Co. are being operated to capacity and will be kept running steadily through the winter. There is a stock on the yards of more than 5,000,000 brick, and about 60,000 brick is being turned out daily.

One of the largest contracts for fire brick ever placed in the Pittsburg district was awarded to the Pennsylvania Clay Co., Fallston, Pa. The contract was given by the Jones & Laughlin Steel Co. and calls for 1,700,000 wire-cut brick for building purposes.

### ALL BRICK LOOKS ALIKE TO LANE

Commissioner Lane of the interstate commerce commission has just published a ruling of the commission in regard to complaints against the Pennsylvania and Baltimore & Ohio for brick shipments from eastern Ohio to New York and eastern points. Mr. Lane says there must be no distinction between the three classes of brick turned out from one kiln and so nearly alike as to need an expert to tell the difference. All must be hauled under the same rate.

### 30 RICH LUMBERMEN IN TRUST SENT TO JAIL

Toledo, O., July 12.—The convicted members of the Toledo brick and lumber trusts were called into court today before Judge Morris and sentenced. The brick men by pleading guilty to but one section of the anti-trust law, were fined \$1,000, while the lumber men were given six months in the workhouse.

The brick dealers who were fined \$1,000 each are:

Lawrence Burkhardt,	Adam R. Kuhlman,
Albert E. Macomber,	William J. Spear,
Richard W. Clarke,	R. E. Kellar,
Frank Gorman,	Frank E. Tracey.
Wm. A. Howell,	

The lumber dealers who got six months each are:

Marcus V. Barbour,	Frederick E. Witker,
Geo. W. Campbell,	William F. Witker,
Jas. H. Campbell,	Edward E. Arnsamm,
Geo. L. Freeman,	Charles G. Bremer,
Reuben Kimball,	Edward J. Goulett,
Hiram R. Kelsey,	Frederick C. Hahn,
Clarence H. Packer,	Charles W. Harris,
John H. Puck,	Eben D. Hopkinson,
Rowland Starr,	J. A. Van Karsten,
David Trotter,	Ed. E. Washburn.

### JENNIE M. STROBIL CLAIMS \$36,000 FROM ESTATE OF LATE AMOS T. GRIFFIN OF UTICA

"I conducted his business and helped him make his fortune, and I believe that I am entitled to share in the profits." is the sum and substance of Miss Jennie M. Strobil's reason for claiming \$36,000 from the estate of Amos T. Griffin, a former wealthy brick manufacturer of Utica, Ill., who maintained an office at Canal and Sixteenth streets.

The case is one of the most peculiar on record. Not a single witness so far heard has had any reflection on the habits of the decedent and the plaintiff. Even Ernest V. Johnson, executor of the estate and legal defender of the suit, says nothing more unkind than that checks were procured "by fraud and under undue pressure," and that he only seeks to be convinced that "value received" was given for the face of the checks.

In addition to her work at the office, Miss Strobil avers that she nursed Griffin through many illnesses and that he was compelled to quit his home because it was made unpleasant for him. All that the plaintiff was permitted to testify to was that Griffin gave her one blank check on the Corn Exchange National bank when he knew he was going to die and instructed her to ascertain his balance in the bank and fill in the check for that amount. She did so for \$2,274. Several witnesses corroborated her allegations.

### FULTON BRICK MAKERS BUILD MAMMOTH TANK

Powers Bros. & Maynard, brick manufacturers, whose plant is just below Fulton, Va., have completed a mammoth concrete tank guaranteed to hold 100,000 gallons of water. This reservoir is for the purpose of furnishing water to the plant in dry spells. It is said to be the largest tank in the state.

### PAYMASTER HELD UP ON THE WRONG DAY

New Brunswick, N. J.—Three masked and armed highwaymen held up the paymaster of the Excelsior Terra Cotta Company while he was driving from the Rocky Hill Railroad station to the company's plant, a half mile distant, today, but did not get anything.

Tuesday is the regular pay day at the plant. For some unexplained purpose, pay day was changed this week to Friday, and the paymaster did not have the \$10,000 which he usually carries with him.

As he was driving along a lonely stretch of road three men jumped in front of the horse, and covered the paymaster and driver with their guns. The paymaster permitted the men to search the carriage. Then they fled.

### IDEAL CONCRETE MACHINERY COMPANY AGAIN ENLARGES

The Ideal Concrete Machinery Co., of South Bend, Ind., have completed a deal for the purchase of the plant, business, patents, stock and good-will of the White Cement Machinery Co., of Jackson, Mich., thereby bringing into the "Ideal" family a number of machines that makes the line wonderfully complete, and will doubtless result in practical control of the concrete machine industry.

The simplicity and other merits of the former "White" machines for the manufacture of cement sills, steps, side-walks and posts, has made them famous for years among concrete block makers and contractors in all parts of the United States. These features appealed particularly to the Ideal Concrete Machinery Co., realizing as they did, that the addition of the "White" machines would make the Ideal line complete, universal and invincible.

The former "White" machines will hereafter be manufactured with the Ideal machines, and will be known as the Ideal Sill, Side-Walk, Step and Post Mold. The recently enlarged manufacturing capacity of the Ideal Concrete Machinery Co. places them in position to handle this increased volume of business without delay, and orders for the new Ideal machines will be filled as fast as received.

An elaborate catalogue has recently been issued by the Ideal Concrete Machinery Co., which to all intents and purposes is an encyclopedia on concrete block manufacture. It is sent free on application, and will prove interesting and valuable to builder and manufacturer alike.

### ARKANSAS BRICK MAKERS MEET

A meeting of the Brickmakers' Association of Arkansas was held in the rooms of the Builders' League, corner of Third and Main streets, Little Rock, at which some routine business was transacted and officers for the ensuing year elected. Several out-of-town brick manufacturers were present.

The election of officers resulted as follows: A. Brewster of Pine Bluff, president; T. T. Cotnam of Little Rock, vice president; C. E. Taylor of Little Rock, secretary and treasurer. A. Brewster is president of the Pine Bluff Brick Company, T. T. Cotnam is with the Little Rock Granite and Brick Works, and C. E. Taylor is with the Arkansas Brick and Manufacturing Company of this city.

The meeting adjourned subject to call of the president.



## SAND OR LIME BRICK OR BLOCK NEWS

Elkins & Norris, Richford, Vt., are manufacturing cement brick and tile.

The Kiel Cement Brick Co., Kiel, Wis., is now making cement blocks for a silo.

Stein-Williams Brick Co., Niles, O., has begun operations in their brick plant.

Louis Schuidt, Grand Island, Neb., is manufacturing a fine cement brick as well as clay brick.

Sidney Smart has installed a compressed brick plant at Milford Lake, with a capacity of 5,000 brick.

Frank Tildon of Vernon, Mich., has purchased an improved cement brick machine and is now operating same.

Hutchinson, Kansas, is to have a sand lime brick plant, the sand being taken from the river. Col. L. A. Beebe can be addressed.

The manufacture of cement brick at Pulaski, N. Y., will soon be extensively engaged in by J. G. Mahaffy and Charles C. Clark.

Thomas Wilson and George Foothold, Wilkesbarre, Pa., are interested in a plant for the manufacture of cement brick for facing purposes.

The new cement brick plant at Natick, Mass., is quite an accession to Natick. They have three buildings and are negotiating for land for more.

The J. E. Bartlett Co., Jackson, Mich., has secured the contract to furnish 700,000 sand-lime brick for the binder plant at the Michigan State Prison.

The Watertown (S. Dak.) Pressed Brick Co. has resumed operations after a month's shut down resulting from the burning of a portion of the plant.

E. Schmitt, Logansport, Ind., who has been selling stock in the proposed sand-lime brick plant expects to soon have enough stock sold to start the factory.

The Cement & Concrete Co., of Woodward, Okla., has been incorporated with \$10,000 capital stock by S. B. Laune, E. P. Burdick and A. Van Pelt.

Wm. Murray, Sanford, Fla., has started a factory for the manufacture of drain tile out of cement and sand. Another factory will soon be started by J. E. Pace and J. B. Randall.

The Electric City Brick Co., Schenectady, N. Y., has been incorporated with \$25,000. Incorporators are Fred N. Stevens, James M. Carpenter and George S. McKearie, of Hoosick Falls, N. Y.

The employees of the Jackson & Church Co., The Jackson, Church & Wilcox Co., and the Saginaw Sandstone Brick Co., all of Saginaw, Mich., recently went on an excursion to Bay Port, 2,000 people participating.

The San Antonio (Texas) Brick Company has been organized and will manufacture sand-lime brick by the middle of September. The officers are: Geo. H. Craft, president; D. B. Sanders, secretary; J. M. Bennett, Jr., treasurer.

The Sandstone Brick & Lime Co., Seattle, Wash., has been reorganized with \$100,000 capital stock. A sand-lime brick plant will be erected at once that will cost \$75,000. The officers are: H. R. Rustad, president; Jonas Bushell, vice president; G. S. Hastings, secretary; A. G. Keene, treasurer, and M. F. Shaw, manager.

## MISCELLANEOUS ITEMS

Grand Rapids, Minn., is promised a large brick works.

A company is forming at San Angelo, Texas, with \$15,000 capital stock to manufacture brick.

The Mohawk (Tenn.) Sewer Pipe Co. has been chartered and will operate at Mohawk and Jefferson City.

J. L. Mahand, of Omaha, Neb., is considering the building of a large shale brick plant at Fort Smith, Ark.

The Federal Brick & Clay Co. are removing the plant at Pond Creek to another plant of the company in New Jersey.

The Marquette (Kansas) Salt & Brick Co. are gathering estimates on the cost of installing a brick plant at that place.

The Fitchburg (Mass.) Brick Co. has now made its first brick since they remodeled the yard. The plant is operated by electricity.

The new plant of the Jacobs Brick Co. at Berlin, Ct., has been started up. M. E. Jacobs is the president and Leon LeClair is secretary and treasurer.

The Tyler Brick & Tile Co., Middlebourne, W. Va., has been incorporated with \$10,000 capital stock. The stockholders are J. E. Grin, D. Hickman, J. E. Sellers and others.

The Penn Vitrified Brick Co., Cameron, Pa., has been incorporated with \$500,000 capital stock. Incorporators are H. G. Walker, E. N. Walker, C. H. McCutcheon and W. H. Kink.

The Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., have just shipped one of their modern 9-ft. Dry Cans to the East Windsor Brick Works, East Windsor Hill, Connecticut.

The Owensboro (Ky.) Tile and Sewer Pipe Co. are erecting a building 300x75 feet, three stories high and are equipping it with sewer pipe machinery; also building the necessary kilns for the plant.

Victor Cushwa & Sons, of Williamsport, Md., owners of the Conococheague Brick & Earthenware Co., have installed new and modern machinery and with new methods are now producing fine pressed and ornamental brick.

F. E. Hind, Supt. of Construction of the Federal Prison at Leavenworth, Kansas, has held a conference with W. S. Sames, architect of the prison at St. Louis, Mo., and examined the revised bids on the enlarging of the prison brick plant.

Mr. S. E. Ream, Aldan, Delaware Co., Pa., has placed his order with the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., for a soft mud equipment for the manufacture of brick, and which outfit is to be installed at Ephata, Pa.

The E. K. Ramsey Co., Penn Yan, N. Y., has been incorporated with \$50,000 capital stock to manufacture ceramic products. The directors are E. K. Ramsey, of Penn Yan, Albert H. Trotter, of Brooklyn, and Samuel J. Katzeberg, of Sanariss, R. I.

The Latonia Brick Co., Latonia, Ky., are equipping an up-to-date modern brick plant including "Martin" Latest Improved Brick Machinery with the "Martin" Patent Rack Pipe Steam Brick Dryer System, of 40,000 daily capacity, it being installed by the Henry Martin Brick Machine Manufacturing Co., Lancaster, Pa.

The J. M. Ivie & Sons' plant at Kirksville, Mo., will manufacture paving brick.

A government sea-wall at Galveston, Texas, is to be built that will cost \$750,000, and a driveway paved with vitrified brick is to be made.

A. J. Swanson & Co., Lindshorg, Kansas, is making extensive improvements to the plant near Fremont. Several new kilns will be added.

The Kiesel Brick Co., Rochester, N. H., whose plant was burned by fire recently has completed its new factory. William F. Turner is superintendent.

The Northern Pressed Brick Co., Crookston, Minn., has installed a cable conveyor that carries the brick from the moulding table to the racks, doing away with much manual labor.

Cutshall & Flagg, Brazil, Ind., have been awarded the contract to erect at Streator, Ill., the \$80,000 drain tile plant for the National Drain Tile Co., of Terre Haute. The work has been started on same.

The National Brick Co., Chicago, retired \$20,000 of its first mortgage bonds on July 1st in accordance with the terms of the sinking fund. The National Company is now operating all four of its plants.

John Hookers, who operates a brick yard at DePere, Wis., on the east side has decided to go into the business on a larger scale, has bought 56 acres of clay land on the west side of Fox River at West DePere. It is the brick yard property formerly run by Eugene Smith.

The proposed brick plant for McDade, Texas, is still hanging fire with good chances of being carried through.

The Nelson Brick Co., Mound Valley, Kansas, brought in a 4,000,000 gasser two miles north of town at a depth of 750 feet.

Another large brick making plant is to be built at Alton, Ill., on the north side. James Wilson is one of the promoters.

The A. J. Hunter Brick Works at Grand Forks, N. D., is to be moved from its present location to near the Red River Valley Brick Co.'s plant.

Chrissinger & Strain, Mt. Pleasant, Iowa, have their new plant on Monroe street ready for business and the plant's capacity will be taxed to supply the demand.

The Adams Brick Co.'s plant at Alexandria, La., has been started again after a 43 days' layoff on account of the clay lands being overflowed by the Red River.

The Modesto (Cal.) Pressed Brick Co. has filed articles of incorporation with \$20,000 capital stock. The incorporators are J. W. Craycroft, T. K. Beards, T. J. Wisecarver, B. J. Smith, and others.

The Pittsburg (Pa.) Silicia & Brick Co. has been incorporated with \$20,000 capital stock. Directors are John M. Henry of Bridgeville; Frank R. Schneider of Crafton, and Oswald Ende of Carnegie.

The Independent Press Brick & Tile Co., Dallas, Texas, has been incorporated with \$500,000 capital stock. Incorporators are John R. Lyon, Geo. F. Burbank, W. A. Yoakum, C. S. Conrad and C. C. Warfield.

## The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, on waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time in the ordinary continuous kiln.

### CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

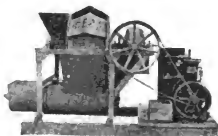
This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



**WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.**



Model A—Ideal Concrete Block Machine



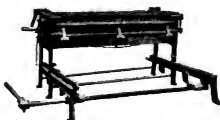
Ideal Concrete Mixer



Ideal Concrete Brick Machine



Ideal Cement Sill Mould



Ideal Special Sill and Lintel Machine

# IDEAL CONCRETE MACHINERY CO.

Manufacturers of  
"Ideal" Concrete Machinery

Block Machines, 16 to 24 in. lengths  
(Interchangeable)

Brick Machines, Mixers  
Sill and Lintel Machines  
Pier and Column Moulds  
Step, Sidewalk and Sill Moulds  
Ornamental Moulds for  
Shafts, Capitals, Vases, etc.

Largest exclusive manufacturers of Concrete Machinery in the world. Originators of the "down face" horizontal core concrete block machine. Model "A," 16 inch; Model "E," 24 inch. Machines are interchangeable to 8, 10 or 12 inch widths, and produce whole or solid blocks in full or fractional sizes, within capacity.

Manufacturers of the IDEAL Sill and Lintel Machine, IDEAL Continuous Batch Mixer, IDEAL Cement Brick Machine, IDEAL Sill and Cap Molds, IDEAL Cement Step Molds, IDEAL Sidewalk Molds, IDEAL Ornamental Column Molds with Ionic or Doric Capitals, IDEAL Ornamental Spindle Molds, Porch Column Block Molds, Concrete Lawn Vases, Pancy Belt Courses, Ornamental Caps, Ornamental Ball Molds, and everything in regular and special designs.

More than *two thousand* of our Block Machines alone are being operated in the United States. Exclusively used by all up-to-date manufacturing plants. Importing houses of reputation and reliability are "IDEAL" agents in every country on earth. Largest exporters of concrete block machinery in the United States.

Write for Catalogue. Magnificently illustrated. Shows gross and net weights of all machinery and supplies; gives weights and cubic measurements of materials. Tells how to make exact calculations of cost of manufacture of Ideal Concrete Blocks in any locality. The most comprehensive encyclopedia on concrete machinery and its allied interests ever published. Sent free on application.

**Ideal Concrete Machinery Co.**

Dep't W South Bend, Indiana, U. S. A.  
Mussens Limited, Montreal, Canada Sole Agents for Canada

The Packerton (Ind.) Tile Co., has been perfected and Isaac Simison is in charge.

The National Fire Proofing Co. has declared its usual quarterly dividend of 1 per cent on its preferred stock, payable July 15th.

The Carlyle Paving Brick Co.'s works at Portsmouth, O., is building an extensive wall around its works to protect them from floods.

O. H. DeLamberton proposes to establish at Callahan, Fla., in connection with his industrial college a brick and drain tile factory.

The Manteno (Ill.) Brick Co. has landed a contract to furnish 3,000,000 brick for the Wisconsin State capitol building at Madison.

The Calumet Brick Co., of Chicago, has bought more land and will enlarge their brick plant. The company is owned by Charles Alsip.

McPherson & Jarvis, Chewelah, Wash., have bought modern machinery for the manufacture of brick from the J. D. Fate Co., of Plymouth, Ohio.

The brick plant at Plaquemine, La., has been bought by Adonis Schnebelin, B. C. LeBlanc and L. P. Barrow and will be operated as David Alternus & Co.

Arrangements have been completed for the building of the Elsmore (Kans.) Brick Works. A site has been chosen where there is plenty of gas and a lake of water.

Chas. L. Snyder, who has been superintendent of the Humboldt (Nebr.) Brick Works since it started, has resigned and accepted a similar position at Havensville, Kansas.

I. S. Finkle has started the Anson Brick Works at Marshall town, Ia., which has been idle for some time. The old machinery has been overhauled and some new machinery added.

C. T. H. Benton, manager of Mt. Zion Land Syndicate, Peoria, Ill., contemplates building a brick plant at the proposed Mt. Zion, which is to be located on the Illinois River, north of Peoria.

The Oliver Silicia Sand Co., Warwick, Ohio, has been incorporated with \$25,000 capital stock. Incorporators are James F. Parks, Edward Oliver, J. H. Rhodes, F. W. Well and A. L. Atkinson.

The men at the yards of the Hydraulic Press Brick Co. and the Wisconsin Red Press Brick Co. at Menominee, Wis., went on a strike, asking for from ten to thirty-five cents a day more and the wheelers to be paid by the thousand.

The Dyett Brick Machine Co., New York, has been incorporated with \$10,000 capital stock. Incorporators are, James H. Dyatt, 160 Albany Ave.; Max Horn, 1232 Putnam Ave., and John P. Lamerdin, 84 Barley St., all of Brooklyn, N. Y.

Mason City, Ia. is to have another new \$200,000 brick and tile plant. Dr. C. W. Sanders, of Manley, is president; A. L. Rule, secretary; P. F. Rhodes, of Fertile, treasurer; among the stockholders are, H. E. Francisco, J. E. Markley, E. R. Hubbard and A. W. Dawson.

The Newbert-Noyes Co., Augusta, Maine, has purchased the Coney Brick Works and has put same in operation.

Geo. W. Hewes, Mayville, N. Y., has bought 100 acres of clay land and will organize a \$40,000 brick and tile plant.

The Fertile (Ia.) Clay & Peat Co. has been organized at Augusta, Maine, under Maine laws, with \$200,000 capital stock.

The Middleton (Idaho) Brick Co. has its second kiln of brick burning and will continue making brick for some time for use in Middleton buildings.

The Corning (O.) Clay Mfg. Co. has been incorporated with \$40,000 capital stock by John Holden, James Jenkins, M. E. Joyce, C. B. Holcomb and others.

The Rutherfordton (N. C.) Brick Co. has recently been organized. M. L. Justice is president, H. L. Carpenter, secretary-treasurer, and C. E. Hill, manager.

The Akron (O.) Tile Co. has been incorporated with \$5,000 capital stock by Frank Nolte, M. L. Hibson, D. C. Bannerman, Frank Frieberger and F. A. Boren.

The papers have been signed by J. W. Holmes and the Federal Brick Co., New Britain, Conn., whereby this company takes all of his brick for the next five years.

The Corsicana (Texas) Pressed Brick Co. has been incorporated with \$10,000 capital stock. Incorporators are C. R. Sherrill, James Garrity and J. L. Whitesall.

The International Coal & Brick Co., Rockdale, Texas, has been incorporated with \$50,000 capital stock. Incorporators are H. E. Rowlett, B. B. Baxter and W. W. Wills.

## DIRECT HEAT

# DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

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## CLAY RECORD.

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## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part. Cheap. Have several Brewer Mills for sale, and others.  
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One power Press, in number one condition, used only but a short time, capacity 1000 per day. Ask for full particulars.  
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Modern soft Mud Plant, city 12,000, good business, good prices, abundance of clay and sand. Address.  
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Two American Clay Machinery Company No. 28 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.  
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One Chambers pug mill, practically new, sufficiently large for any output. A first class machine in every respect. Address  
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A first-class tile and brick plant in best part of Iowa. Capacity 15000 brick or tile in proportion. Reason for selling, age. For particulars write to  
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For Sale—75 Acres, 3 feet of shale, 10 feet of Pitt Clay, 3 feet of Coal developed. Excellent conditions. Railroad track.  
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Good brick yard in county seat, capacity 30,000 brick daily. Can't supply the demand. Offered at \$8.75 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 5 mile. Plenty of labor and 400,000 brick now contracted for. Good reason for selling. No competition.  
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Two complete sets Brick making Machinery including Chambers Brick Machine, Elevators, Clay Rolls, Granulators, Rods, etc. also one Frey-Sheckler brick Machine, at present in operation.  
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Eight and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special price.  
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FOR SALE—CHEAP—New and re-laying rails 16, 18, 20 and 24 pound. For price, address  
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Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south.  
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Clay Disintegrator, new \$500; Tempering Wheel used only two seasons \$450.  
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A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 16 feet deep, light over burden of soft sand. Good plant in place. Large quantities have already been mined and sold. Can be bought cheap. For full particulars and samples, address  
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For further particulars, write to  
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Six men experienced in Hollow brick manufacture, testing, highest wages no labor trouble. Apply to  
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## MANAGER WANTED

Wanted—Manager and superintendent of a brick plant established a number of years and making high grade stiff brick. Must be competent to handle peculiar clay and make At brick, understand machinery, good business ability, the management of men; have unquestionable habits, first class reference. Address in full and in confidence stating salary expected.  
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One Raymond Rotary Automatic Down-Cut Cutter, with 40 feet of off-carrying belt and separating table. This machine is brand new but we want the room immediately and will accept any reasonable offer.  
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A good Road Machinery Co. make, No. 4 Champion Grader, in perfect condition, very little used; no reasonable offer refused.  
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Position wanted as Assistant Superintendent. Experienced in Press Brick, Paving Brick, Fire proofing, Roof Tile. Can give references. Address:  
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One of the best places in the whole country to establish brick making plant. Now having all available clay scientifically tested and will give detailed information upon application. Large quantities of clay all along Pacific Coast and Columbia River. No brick making plant within 50 miles.  
R. Chamber of Commerce  
Astoria, Oregon



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### THE MANUFACTURE OF LARGE FIRE-CLAY GOODS

We pointed out in the first section of this article that the composition of the mixture of clays and other materials is of great importance to the manufacturer of large articles such as tanks and baths, and that whilst this is generally recognized, the effect of the relative sizes of the particles composing the mass (which is equally important) is seldom studied.

The sizes of the different particles does not altogether depend on the size of mesh of the riddles used for sifting the clay as it comes from the grinding mills. Indeed, the riddle thus used merely determines the size of the largest particles, and has no effect in determining the sizes or proportions of smaller particles. These are dependant on the nature of the grinding machinery and on the length of time the clay is subject to grinding or crushing.

With the ordinary edge-runner mills, and a riddle with twenty meshes per linear inch, the "tailings" (or clay which passes over instead of going through the riddle) will often, on a further examination, be found to contain a notable proportion of matter which will pass through a sieve of the mesh used, and the sifted material from beneath the riddle will seldom contain more than 7 per cent. of material of a diameter approaching the size of the holes in the riddle. The greater part (often more than 50 per cent. of the sifted clay) will pass through a sieve with sixty meshes per linear inch!

Consequently, when a riddle with only six meshes per linear inch is used, the clay will generally be sufficiently fine for resisting frequent changes of temperature during and after firing, though the presence of the coarser pieces sometimes presents some little difficulty to the workman endeavoring to obtain a smooth surface to his work.

If the riddle is incapable of dealing with all the clay put on to it by the mill an excessive proportion of "tailings" is produced, and these being returned to the mill are ground still finer, so that an excessively fine clay is produced. In one case, in the author's experience, the "tailings" from a No. 20 riddle contained over 25 per cent. of material

which would pass through a No. 20 sieve with a little shaking or gently brushing, and the greater part of this was so fine as to pass a No. 60 sieve. The result of using so short a riddle that it could not accommodate the clay was shown, not only in the small output of the mill, but also in the excessive amount of dunted ware which came from the kilns, and was caused by the presence of too many fine particles in the clay. By replacing the riddle by one 6 ft. long and of the same mesh this difficulty was entirely overcome.

No absolute rule seems possible whereby one can decide on the exact proportions of particles of different sizes which should be mixed to form a perfect material of which to make large articles, nor is one likely to be found, because the influence of the composition of the clay and variations in the drying and firing are too great. Nevertheless, a great step forward has been made when a manufacturer of such articles systematically examines his clay and other materials by passing it through a series of sieves of increasing fineness, and noting the proportion of matter which remains on each.

An excellent series for this purpose consists of six sieves each numbered according to the holes per linear inch, namely—Nos. 6, 12, 25, 40, 60, and 100. If desired a supplementary sieve, No. 200, may be added, but will seldom be found necessary.

When a satisfactory clay or mixture has been obtained it is passed through these sieves in succession, and the proportion remaining on each is noted. In future mixings the same testing is repeated, and any notable variation is enquired into and the variation stopped. Such variation is usually due to something wrong with the mills or riddles, though occasionally it may be due to the introduction of a different clay.

It is very desirable to test the ground clay and other materials separately as well as when mixed, as this gives a more rapid clue to the source of variation when such variation occurs. The test need only take a few minutes, as about 2 lb. is ample for a test if a fairly accurate pair of scales is used for weighing the different portions of clay,

## CLAY RECORD.

whilst if 1 kilo of clay (or mixture) be used, and the portions on the sieves weighed in grammes, the percentage of each may be found with a minimum of calculation.

Although care is required not to have too much fine clay present in the paste of which the goods are to be made, it is equally necessary to avoid the use of too much coarse burnt material. This latter is harder to the touch than is coarse clay, and will not allow the particles of clay to be smoothed over it in the finishing of the articles. Consequently, when the burnt material is insufficiently ground the goods will have a rough, uneven surface, which does not enamel properly.

As in the burning of either clay or bauxite the particles become cemented together somewhat, there is a scarcity of very small particles in ground bricks. Hence the grinding may be carried further, and may be more prolonged than with raw clay without any risk of the material being too fine. This forms an additional reason why the fineness of the different materials composing the mixture should be tested on each separately as well as on the mixture. It is rarely advisable to pass the burnt material through a coarser sieve than No. 12, and at least 80 per cent. of it should pass a No. 40 sieve when tested, as just described. If this is done little or no difficulty will be experienced in the finishing of the goods, and, provided the raw clay is not too finely ground or present in too large a proportion, the use of sawdust to "open" the mixture may be dispensed with.

The proportion of burnt material which may be added will depend, as already stated, on the plasticity of the clay used.

## CONTRACTION.

In order that the goods may not twist or warp when drying or being fired, it is essential that they should shrink but little. This means that but little plastic clay can be used in the material, although some is necessary to bind the particles of material together and to give it the general characteristics of clay. With a carefully compounded mixture the contraction from paste to fired articles should not exceed 1 in. in 15 (or  $\frac{1}{4}$  in. per foot), whilst the contraction in the kiln alone should in no case exceed 2 in. in 100 (or  $\frac{1}{5}$  in. per foot). The lower the contraction the better the chance of the ware coming true out of the kilns and drying rooms; hence the clayworker should use as much non-shrinking material as possible in his mixtures, so as to keep the contraction at a minimum.

It is also essential that the drying and heating of the articles should be regularly distributed over their whole surface as variations in the drying or heating of different parts will tend to produce strains which will later reveal themselves in the form of hair cracks.

## POROSITY.

It is thought by some clayworkers that increasing the porosity of a clay is the chief remedy for dunted or "jacked" ware. This is by no means always the case, although when the particles of clay are somewhat widely removed from each other there is more possibility of freedom of movement of the particles than is possible in a close, dense clay. It is, however, essential that the distribution

of "pores" (or air spaces) should be as even as possible so that there is about the same distance between each of the clay particles. This is not easy to arrange, and particularly when some combustible material like sawdust is used there is a great tendency to have numerous moderate-sized pores and fairly large areas where no such pores exist. This tends to weaken the articles rather than strengthen them, but it is necessary corollary to the use of sawdust or other material, the particles of which are relatively large to those of clay. Apart from this combustible matter is also objectionable on account of articles in which it is used having to be fired twice (once to biscuit the clay and burn off the sawdust, and the second time when glazed), as if glazed green and then fired the glaze will be full of pinholes. Porosity, so far as it is required, is best obtained by a judicious sorting of the clay into particles of the correct sizes (as already explained), so that the larger particles form the skeleton of the article, and the smaller particles of true clay substance take their place in the interstices, and at the same time act as a cement in binding the larger particles together. Where, for some reason, porosity cannot be obtained in this way, the use of sawdust or similar material is justifiable.

## REFRACTORINESS.

In order that a sufficiently durable glaze may be fired on the articles (for, in the case of tanks, an acid-proof glaze is often required), it is necessary to fire the goods at a high temperature. Not only so, but the clay mixture itself requires a high temperature if it is to be brought to the point of its maximum durability and strength. Refractoriness of the raw materials is, therefore, a secondary rather than a primary consideration, but at the same time it must not be overlooked.

The capability of the finished articles to withstand rapid changes of temperature involves refractoriness of a somewhat different kind, and is concerned with the freedom of movement of the particles rather than with their fusing point. Hence, clay for baths, hot tanks, etc., should be sufficiently porous, but if the previous considerations have been attended to there will be no difficulty on this head.

No rule can be laid down as to any definite temperature for firing, but it will generally be found that for most purposes for which large articles are used the temperature at which the glaze melts should not be less than 1,100 deg. Cent., and the higher the fusing point of both clay and glaze, the more acid-resisting will be the ware.

## DRYING.

If the clay mixture has been properly compounded and efficiently tempered so as to obtain a thoroughly homogeneous product with the different sized particles properly distributed throughout the mass drying should present but little difficulty if sufficient care is taken not to allow portions of an article to dry before the others. It may be as rapid as can be controlled, but must be thorough and complete, or the steam evolved when the goods are in the kiln will cause cracks.

## ENGOBING AND GLAZING.

The application of a white clay to the surface of fire-clay articles, in order to give them the appearance of earthen-

ware, is best carried out by the "dry" method, in which the material ("body," or engobe) is made into a jelly and painted on with moderately soft brushes, about ten to fourteen coats being required. This does not dampen the clay so much as when "soft body" is used, and in this way greatly lessens the tendency of some clays to "shell."

The engobe and glaze require careful attention, and should be most accurately adjusted to suit the clay and the conditions of firing, as unless this is done trouble is sure to ensue sooner or later. Most of the defective baths and large enameled ware tanks are produced by lack of care at some stage in the manufacture, and a large proportion of the defects are due to want of skill and attention to the composition of the engobe and glaze, and to too rapid or irregular heating of the kiln.

A very common source of defective goods of this class is the material which drops from the roof of the muffle owing to the expansion of the brickwork during the heating. This cannot always be prevented from spoiling the goods, as they are in some cases too large to cover, but much may often be done by washing the muffle over the glaze-slip after carefully removing any loose pieces of brick.

#### FIRING.

The general conditions for firing are to be observed with large ware as with small, but the change in temperature must be made more slowly, and the heat requires longer time to thoroughly penetrate the goods. Hence there is a tendency to get ware, which on breaking, is found to be black in the center of the mass. This can only be avoided by care and experience, coupled with persistent observation and inquiry into "the cause" of the various defects which arise from time to time.

The large amount of water vapor ("steam") set free when clay is first heated in the kiln is often overlooked, and so causes difficulty. It is not usually realized that at least 1 cwt. of water is given off from each ton of clay in the kiln, and consequently the arrangements for the escape of this large amount of steam (over 3,000 cubic feet per ton of clay) are neglected.

Just as the rise in temperature must be very gradual in large ware so must the cooling. Too rapidly lowering the temperature of the kiln (especially between 1,000 and 50 deg. Cent.,) is a fruitful source of dunted and cracked ware, and though considerations of cost must tend to prevent the goods remaining too long in the kiln every endeavor should be made to bring about the cooling as steadily and slowly as possible.

If the suggestions contained in this article are carefully followed, manufacturers of baths and tanks will find that the proportion of defective goods turned out from their kilns will be materially diminished, and that the limit in size of which articles can be made will be indefinitely increased until the articles are so large that the kiln can only just contain them.—British Clayworker.

#### BRICK AS A BY-PRODUCT.

One of the by-products of city refuse destruction in Nottingham, England, is brick for paving or building. The clinkers from the furnace are mixed with cement and, under hydraulic pressure, formed into blocks which are said to be harder and more enduring than rock itself.

#### CHANGES IN THE UNITED STATES GEOLOGICAL SURVEY.

Dr. David T. Day, who for twenty-one years has had charge of the preparation of the Survey's annual report on the mineral resources of the United States, has requested to be relieved of duty as chief of the division of mining and mineral resources, in order to devote his time to the preparation for the Survey, of an exhaustive report on the petroleum resources of the United States. The Director has accepted Dr. Day's resignation, which will take effect August 1, and has designated Mr. Edward Wheeler Parker to succeed him as chief of the division of mining and mineral resources.

Mr. Parker began his statistical work for the Government in connection with the Eleventh Census, in 1889, and was placed in charge of the Survey's coal statistics in 1891. In 1901 he left the Government service to assume editorial charge of the *Engineering and Mining Journal*, in New York, a work for which he had already gained experience as business manager of the Austin (Texas) *Statesman* and as editor of the *American Manufacturer*, of Pittsburg. Upon a change in the ownership of the *Engineering and Mining Journal* Mr. Parker returned to the service of the United States Geological Survey, where has since had especial charge of coal statistics. In 1902 he was appointed by the President to serve on the Anthracite Coal Strike Commission, to whose deliberations he brought a wealth of expert knowledge derived from years of research.

Mr. Waldemar Lindgren will be associated with Mr. Parker in the work of this division, and to him has been assigned the scientific supervision of those parts of the annual report of mineral resources that relate to the metalliferous ores. Mr. Lindgren's contributions to earlier volumes of this report have added much to their value, and the organization of a section of the division of mining and mineral resources under his charge provides for the coordination of all the Survey's work on metalliferous ores, for he is already in charge of the section of economic geology of metalliferous ores in the division of geology.

#### WILL ASK INTERSTATE COMMERCE COMMISSION'S AID AGAINST RAILWAYS ENFORCING HIGHER RATES.

Brick manufacturers of the Wheeling, W. Va., district will appeal to the interstate commerce commission against what they claim are exorbitant rates that are to become effective on eastbound business September 1. At a meeting held this week it was arranged to place the filing of a bill of complaint with the commission. Among the firms that have already signed the petition are the Mack Manufacturing company, the American Sewer Pipe Company, E. S. McLain & Co., and James Porter, all large brick makers. It is said in case the interstate commerce commission refuses to recognize the complaint, an injunction will be asked and the matter will be settled in the courts. One firm, that has contracts for about 800 cars of brick to the east for delivery after September 1, and cannot possibly get the shipment under way before that time, will lose \$25,000 if the new rates are allowed to stand.



## SYSTEM.

With manufacturers it is now more of a question than was formerly the case, what part each individual article in a diversified product plays in the summing up of profits.

System has worked great wonders in the industrial and mercantile world. It has made the great transportation companies a possibility, and it has also brought the great industries up to their present high standard. It is comparatively as valuable to the smaller industries, as it brings to light all wasteful practices about a manufacturing plant.

System also shows up any particularly desirable or undesirable product in a diversified list.

Unfortunately, a good business system is not had without effort. The word implies a saving of work. In some ways system does save work, but it requires close attention in order to prove its greatest value.

A good system can not be installed in any business without more or less of what some people term "red tape." It is true that a system throws more or less work upon an office force, but it removes cost from the producing end.

It is observable that many managers consider extra office help as an expensive luxury and such usually are on the lookout for some means of saving what little office work is done, or are inclined to use their own time (which should be more valuable) in work which they can not give the proper attention. It is no uncommon thing to find small manufacturing concerns, who perhaps sell their entire product to a few jobbers, with an office practically uninhabited two-thirds of the time, "because there is nothing to do." Little to do means cheap labor to do it. Oftentimes it is more than difficult for a manager to see how he could use office help to advantage, if offered free. It is a difficult matter to figure out the full advantages and needs of a good cost and record system. Every concern which moves much must have a manager who is not troubled that way. The question is theirs to electrify. The best place to start to build up an industry is in the office. The best source of work supply for an office is in the factory.

Offices are not usually judged from an architectural or decorative standpoint, though it is freely admitted that attractive surroundings are very desirable and have no little influence in business transactions.

The office should be the Central Station in every business. To say that it needs to be only small and unimportant is to say that the business with which it is connected is not worth while.

The office conducts primarily only one department; that is selling. In exercising this function it uses, first, correspondence; second, salesmen; and third, advertising, and all these should be based on a thorough knowledge of the manufacturing end.

Unfortunately, good correspondents are not plentiful, and in following out the essentials of business correspondence—thoroughness, clearness and directness—business houses are often compelled to reach the desired ends in a crude manner. Since promptness is recognized as the main essential in business correspondence, the large firms are quickly connected with the fact that it is necessary to employ system in the handling of their correspondence. While

a system applied to the handling of mail will perform the act of keeping replies out, it must be connected with an inside system which will supply the vital point to correspondence. Every manufacturer should understand that his letters must put his proposition before his customers in a clear, convincing manner. It does not matter how well he can handle plain English, his letters are hollow unless emanating from a source which is in close touch with the factory end. The jobber, or customer, is looking for results from all the mail he receives. Literary productions are wasted on the desert air, in the majority of cases.

It is just as evident that salesmen should be well informed in all branches of the business as are the men who have charge of the correspondence. What is wanted in this line is a real live article. No more is it thought necessary to send out entertainers and story tellers; men who could be classed as a fashion plate with a phonograph attachment, as traveling representatives of a business, but rather a man who can show up his case quickly and convincingly, direct and to the point.

Such men are now taking the field. They are going out equipped with a knowledge that carries all the possible questions which may come up in their territory, respecting their particular business. Such men are being equipped in a different manner than formerly. They now get their knowledge through a study of office systems, supplied by data from the producing end, while formerly they had to take a shop experience of two or three years in order to become properly equipped.

One of the most important things to consider, from the manager's point of view, is advertising. If the business world had known, before advertising was so universally acknowledged as profitable, how much money would be spent in non-producing mediums, it probably would never have grown to the wonderful position it now holds in the business world.

Advertising is known to be profit paying of the largest kind. More money is wasted in it perhaps than is made, but the failures are not what we are considering. One style of advertising mediums pay. That style is the engaging, interesting subscriber holder; the optimist and the friend, the editor who can not help but make his paper popular because it reflects his own spirit. Such an editor wakes up the reader, braces up the advertiser, promotes the welfare of his district, makes the grass grow in the desert, in fact, and the whole line of his field is a live wire, and business "gets a move on" when it comes in contact with it. Such a medium is what all advertisers should search for and they should take the nearest approach to it in a medium covering their territory and reaching the sort of trade they are after. Good advertising is often grounded in a poor office.

When one begins to think it over, the office seems to be quite a place—yes, a power of influence.

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Mr. Gus Kampmann, of New Orleans, La., has placed his order with the Henry Martin Brick Machine Manufacturing Co., of Lancaster Pa., for a complete soft mud brick equipment to be installed at Nicholson, Miss.

# **SOME INTERESTING FIGURES REGARDING HUDSON RIVER BRICK CONDITIONS AND OUTPUT**

The July bulletin of the New York State Education Department, issued under the direction of John M. Clarke, director of the New York State Museum, gives some interesting information about the manufacturing of building brick in the counties along the Hudson River. Mr. D. H. Newland, who has compiled the information contained in the bulletin, says that this part of the state is especially favored in respect to that particular industry. New York city and vicinity, with its rapidly increasing population, is by far the greatest market for such materials in the United States. There exist enormous clay deposits, suitable for making the common grades of brick, on either side of the river from Rensselaer and Albany counties down to Rockland and Westchester, while the river itself affords a convenient and cheap means of transportation direct from the yards to the market. As a result of these conditions the brick industry of this section has developed to proportions that are without parallel in any other part of the country.

In 1906 the output of common brick in the Hudson River region amounted to a total of 1,230,692,000. This is approximately 78 per cent of the whole output of common brick in the State. The value of the production was \$7,352,377. In the preceding year the output was 1,219,318,000, valued at \$8,191,211. There was thus a gain of 11,374,000 in quantity, but a loss of \$838,834 in value. The number of companies reporting as active was 131, an increase of 12 for the year, or 20 more than in 1904. Rockland county was represented by the largest number, 33, and its production amounted to 296,145,000, valued at \$1,767,012. Ulster county, with 26 operative companies, produced 252,665,000, valued at \$1,465,457; and Orange county made 189,180,000, valued at \$1,170,695 reported by 12 companies.

The average number of brick made in each plant in 1906 was 9,471,000, as compared with 10,246,000 in 1905 and 9,180,000 in 1904. The price for the whole region averaged during the year \$5.98 a thousand against \$6.34 a thousand for 1905 and \$5.79 a thousand for 1904.

The main feature of the past year's record was the remarkable range in the market prices received for brick in the New York market. Owing to the great building activity that prevailed during 1905, the whole product of that year was practically disposed of by the close of the brick-making season, and the plants carried little or no stock through the winter. Before the opening of the yards in the spring of 1906 there was a veritable brick famine. Prices reached an unprecedented high level; as much as \$10 and even \$12 a thousand was paid for the available supply. With the resumption of manufacture they rapidly fell to \$8 or \$9, and as the season advanced they continued to decline, due to a slackening in building operations. As the plants had been brought up to their highest efficiency in anticipation of a profitable season, there were also unusually large quantities offered upon the market. In the last months of the season, the prices fell to about \$5 a thou-

sand at the yard and held at that level throughout the remainder of the year, with small demand. At the end of the year the stock held by the companies along the river was probably in excess of \$300,000,000, or fully 25 per cent of the whole output. A radical curtailment of operations is to be expected for the current season.

The output of common brick in the Hudson River region in 1906 is given in the bulletin as follows:

Albany county, 11 plants, 74,083,000 bricks, value \$461,399; Columbia, 6 plants, 84,500,000 bricks, \$489,750; Dutchess, 19 plants, 167,132,000 bricks, \$975,410; Greene, 6 plants, 64,690,000 bricks, \$90,748; Orange, 12 plants, 189,180,000 bricks, \$1,170,695; Rensselaer, 9 plants, 31,776,000 bricks, \$173,906; Rockland, 33 plants, 296,145,000 bricks, \$1,767,012; Ulster, 26 plants, 252,665,000 bricks, \$1,465,457; Westchester, 9 plants, 70,621,000 bricks, \$458,000. The total output of the 31 plants in the region last year was 1,230,692,000 bricks, the market value of which was \$7,352,377.

The output of common building brick throughout the state in 1906 amounted to 1,575,434,000 valued at \$9,302,105. In addition there were made 24,625,000 front and fancy pressed brick, valued at \$386,124; making an aggregate output of brick for building purposes of 1,600,059,000, valued at \$9,688,289.

## **TESTS ON CONCRETE AND REINFORCED CONCRETE**

Bulletin No. 10, Tests of Concrete and Reinforced Concrete Columns, Series of 1906, by Prof. Arthur N. Talbot, has just been issued by the University of Illinois Engineering Experiment Station. This bulletin will be of interest to many engineers, architects and constructors engaged in reinforced concrete work. Comparatively few tests have been made on concrete columns, and in most of these, small test specimens were used. The tests described in this bulletin were made on the 600,000-lb. testing machine in the Laboratory of Applied Mechanics. The care exercised in the testing, as well as the effort given to make the fabrication of the columns approach conditions of engineering construction, add to the value of the results. The study of the problem and the analysis of the tests made in the bulletin are features which will be appreciated by many readers. The results show the value of reinforcing columns with longitudinal rods and also the necessity of exercising care to secure uniformly good work in construction. Attention is called to the fact that the strength of concrete columns may be expected to be less than that of cubes made and tested in the ordinary way. Caution is also given concerning the construction of columns in building operations. The bulletin uses a method of determining the relative stresses in steel and concrete and discusses the basis of working stresses and factor of safety for this kind of construction. Those interested in the analysis of the stresses which are developed in reinforced concrete will be interested in the views expressed as to whether elastic or inelastic deformations should be used in the determination of the modulus of elasticity and also in the form found for the stress-deformation curve of the concrete in the columns. The bulletin contains 64 pages. The work on concrete columns is being continued, a series of tests on hooped columns being now in progress.

L. P. BRECKENRIDGE.

### RELATIVE COST OF STEAM AND PRODUCER GAS COMPARED\*

The methods of manufacturing producer gas may be classified under two headings, according to the way in which the draft is created—namely, induced or forced, says J. R. Armer, of the Grand Trunk Railway, Toronto.

Almost any carbonaceous fuel may be used in the manufacture of producer gas, including charcoal, coke, hard coal, lignite, peat, wood, sawdust, and even city refuse. If coal is used, it should be of good quality. It should have a low percentage of ash, and should not clinker. In case the gas is to be used in gas engines or in the manufacture of iron, it should contain a low percentage of sulphur. The coal should be as nearly uniform in size as possible, and not too large. The fuels used in suction producer gas plants, which are the most common in small units, are usually coke or anthracite coal. These fuels do not clinker, and they produce a gas containing a low percentage of tar. Lignite and peat have been used in Europe in pressure producers, and the gas has been used for gas engines in many instances.

Some of the devices used for cleaning are as follows: Liquid scrubbers, rotary scrubbers, deflectors and absorbers. The abstraction of tar is one of the greatest difficulties met with in cleaning producer gas, and as its elimination is absolutely necessary for the best results in gas engine practice, the means adopted for its removal are very important considerations.

Where there is an excessive amount of tar some builders use rotary scrubbers, or tar extractors, in addition to the wet scrubbers. They claim very satisfactory results. Other makers, instead, advocate having the fires so arranged that the tendency is for the tar to be converted into a permanent gas in the producer. To accomplish this, the products of distillation are passed through a hot bed of fuel.

One of the important points about a producer gas plant is the short time required in starting, and the little attention required when it is standing idle; even after several hours' idleness the plant may be started and be working at its full capacity in a few minutes.

The labor required to operate with a pressure plant is about the same as that required for a steam plant of similar size, while with a suction producer plant the labor required is much less.

The amount of water used in a producer is not more than half that required in a steam plant of similar size. If to see if the coke or other material is clean enough to assure efficient working. They should be cleaned once in six or eight months, according to conditions.

The fire should be drawn from the producer about once a week, and the clinkers removed; if the fires are re-kindled immediately so that the fire brick lining is not chilled, the life of the lining will be prolonged considerably.

The regulation of the steam supply to the producer is of considerable importance. In pressure producers the regulation is not very difficult, but in suction producers, where the air supply in the producer depends upon the load on the

engine, it requires special attention. The amount of steam going into the suction producer must always be proportioned to the amount of gas used by the engine, so that the fires will neither become too hot nor dampened. Different firms have different methods of regulating this.

In the case of the gas producer, the gas is conveyed to the engine cylinder, where almost perfect combustion is obtained. The losses in this case are occasioned mainly by the heat radiated from the producer and connecting pipes, the cooling water, used in the scrubbers, be used over and over again, this will be greatly reduced.

No more skill is required to handle a producer gas power plant than is needed for a steam plant of similar size; but it may require some time for men trained to handle steam plants to become accustomed to gas engines and gas producers.

For best results, plants should be kept clean; pipes should be kept gas tight, and arranged so that they may be cleansed of dust and tar; scrubbers should be inspected periodically, in the heat lost in cooling the gas, in cooling the engine cylinder, and in that lost in the exhaust from the engine. The amount of energy lost in this way compared to the amount originally in the coal is very large; the proportional loss, however, is much smaller than in a steam plant.

In a steam plant all the combustion takes place in the fire box, under poorly regulated conditions, an excessive flow of air always being required which carries a large proportion of the heat up the stack, together with unburnt gases, and particles of carbon in the form of smoke. The remaining heat is absorbed by the boiler in generating steam, or is radiated from the fire box; further losses occur through the radiation from the steam pipes and engines, and finally there is the large loss from the exhaust on the engine.

The following heat losses in a modern steam plant, when compared with the losses in the gas plant, will give an idea of where the greater efficiency of a gas power plant, over a steam plant, comes in: Out of 13,500 B. T. U., the value per pound of coal used in the fire box, 135 B. T. U. were lost in the ashes, 675 in radiation from the boiler, 2,970 in chimney loss, 190 in auxiliary exhaust, 520 in radiation from steam pipes and engines, 7,737 in the exhaust from the condenser, 1,273 were converted into power. Considering the mechanical efficiency of the engine as 93 per cent, this would give 1,176 B. T. U. as delivered from the engine in brake horse-power. By comparing 1,176 B. T. U. with the original 13,500 B. T. U., the efficiency of the whole plant is 8.7 per cent.

As a comparison with this, the following figures have been taken from a report on tests made with the Crossley suction gas plants and gas engines by consulting engineers and others, and read before the Manchester Association of Engineers in connection with a paper on this subject.

In the tests reported, the thermal efficiency of the plants ran as high as 24.95 per cent. One of these tests was made with a plant at Milford-on-Sea Electric Works, which at the time of making the test had been in operation for some months. The efficiency of this plant was low in comparison

\*Extract from paper read before the Central Railway and Engineering Club of Canada.

with some of the results obtained, as will be seen, so that the comparison is conservative. The fuel used was anthracite coal having a heating value of 14,895 B. T. U. per pound. The indicated horsepower of the engine was 46.25 I. H. P. The test lasted 3 hours 49 minutes. The total amount of coal used was 133.5 pounds; the coal used per I. H. P. hour was .785. Assuming that the mechanical efficiency of the engine was 85 per cent, the amount of coal per B. H. P. would be .89 pounds. The value in B. T. U. of .89 pounds of coal would be 13,256 B. T. U., which when compared with 2,545, the B. T. U. value equivalent to 1 H. P., gives the efficiency of the whole plant, including the mechanical efficiency of the engine as 19.35 per cent. If the losses in this case be divided up according to the usual proportion of loss in the different parts of the suction producer power plant, they will be as follows: Out of 13,256, the B. T. U. value of the fuel used, 2,651 are lost in ashes, radiation, cooling of gas, etc., 4,445 in exhaust, and 3,166 in cooling the cylinder; the remaining 2,694 are converted into power; the efficiency of the engine being 85 per cent, 2,545 of these are converted into B. H. P.

In comparing these two plants, the efficiency of the steam plant being 8.7 per cent, and that of the gas plant being 19.35 per cent, we find a saving of 55 per cent in favor of the suction producer power plant. In neither of these cases has allowance been made for standby losses, which favor the steam plant.

Regarding fuel required per H. P., manufacturers make numerous claims, many of which have been substantiated. The claims average about 1 pound of anthracite per H. P. per hour, and vary from 0.6 to 1 1-3 pounds per B. H. P. per hour. The 0.6 figure is pretty low, but numerous tests have shown a consumption as low as .8 pound anthracite per B. H. P. per hour.

Considering the high thermal efficiency and the many other points of advantage about a producer gas power plant, its outlook for the future is very bright. It has passed the experimental stage and has become a formidable competitor of all classes of power. Its field of usefulness will doubtless be widened greatly, and already it is being considered as a means of propelling vessels, driving traction engines and for developing power under many other conditions.

In the discussion of this paper several points of interest were brought out. Mr. Samuel Groves said that the pioneers in this work were the French Canadians. To his knowledge over ten suction gas plants had been installed in Quebec. In England they are ahead of both Canada and the United States in the utilization of the gas engine. The United States, however, have beaten the world in the use of the gas producer. The best practical results in Canada have been achieved at Wellington, Prince Edward County, Ont. There, with a 65 H. P. suction gas plant, electrical energy is being supplied at \$20 per H. P. year, 10-hour day; 18 arc lamps for street lighting at \$530 per annum. The stores and residences pay one-half cent per night for continuous incandescent light. Mr. Groves spoke of the electric furnaces as having a bright future, and brought out the fact that the waste gases produced in the electric furnace are comparatively pure, and are, therefore,

very suitable for use in the gas engine. He predicted that the suction gas producer system would play an important part in opening out and developing industries in the great Northwest, where lignites abound.

Mr. R. J. Goudy pointed out that the economy of the gas engine operated by producer gas lies in the almost direct conversion of the energy in the coal into the work. He said that the United States navy were adapting the gas producer and gas engine in naval work.

#### “IDEAL” MACHINES FOR MEXICO.

The success of the Ideal Concrete Block Machine, its universal adoption, and the increasing demand from every country in the civilized world, is a modern proof of the ancient saw that “it never rains but it pours.”

There has recently left the factory of the Ideal Concrete Machinery Co., of South Bend, Ind., the third car-load of a four car shipment of Ideal Concrete Block Machines to Mexico. The fourth car-load is practically ready for shipment, and will go forward at an early date.

Heavy shipment of the Ideal Machines to foreign countries is becoming so frequent as to be regarded as quite an ordinary occurrence. Shipments have recently been made to Valparaiso, Chili; Panama, Central America; Khartum—Sudan, Egypt; Glasgow, Scotland; Budapest, Hungary; Bucharest, Roumania and elsewhere.



Carload of Ideal Concrete Machines En Route to Mexico

The heavy export requirement for Ideal machines, coming, as it does, to swell the monthly multiplied domestic demand has necessitated increased factory facilities that rank the Ideal Concrete Machinery Co. among the leading manufacturing concerns of the middle West.

Recent improvements to the Ideal Machine make it universal in its adaptability and really unique among machines for cement block manufacture. An attractive and expensive catalogue has recently been issued that is a valuable guide to the home builder and the block manufacturer alike. It is sent free on application, and the information it contains makes it well worth sending for.

Two carloads of “Martin” Latest Improved Brick Machinery is being forwarded at the present time to Canada by the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa.

## CLAY RECORD.

### POROUS DRAIN PIPES.

ONE of the most serious difficulties of the drainpipe maker of recent years has been the pressure test which has been applied in order to prove that the pipes were capable of withstanding the action of water under a considerable head of pressure.

This test has usually been carried out by closing both ends of the pipe and forcing in water by means of a pump until a definite pressure (different in the case of different makers) has been reached. If no loss of pressure is experienced at the end of a certain time the pipe is considered to be satisfactory, but if any water oozes to the surface of the pipe (owing to its being "porous") the pipe is condemned as useless.

This term "porous" is used in a somewhat misleading manner, as it includes not only the natural air-spaces or pores of the clayware itself, but it also—and as a matter of experience much more frequently—covers the defects of structure, and the small but real cracks and fissures which exist in the material.

These tiny cracks and fissures are extremely difficult to locate, and with certain clays are almost impossible of prevention unless the process of working up the clay is so prolonged that the cost of manufacture becomes excessive, and no profit results.

Laminating clays, and those in which there is a strong tendency to "flake" are particularly liable to this defect, and as the amount of lamination or flaking varies greatly from time to time, it not infrequently happens that a long run of good pipes may suddenly be ended by a run in which quite useless pipes are made, owing to the increased laminating power of the clay, though the method of working has been in no other respect altered.

Whilst such lamination and failures in structure may often be attributed to faults in the machinery or method of working the clay, it is by no means seldom the case that it is the composition of the clay itself which is at fault.

Thus, the flakey clays are usually highly plastic, this very plasticity being the cause (amongst others) of the production of the flakes. Hence a reduction of this plasticity by the addition of a non-plastic material will frequently remove much of the trouble, and if the added materials are carefully chosen and added in the correct quantities—no more and no less than is necessary to obtain the best results—the difficulty may be entirely removed.

The most suitable material for thus reducing the plasticity of a drainpipe clay is a fairly coarse sand which at the same time contains a sufficient proportion of grains of less sizes to properly mix with the clay and form a mixture of suitable adhesiveness and strength. The disadvantage of such a sand is that it is apt to produce a rough, somewhat unpleasant surface, owing to the different action of the salt on the sand and on the clay.

Where the appearance of the surface is of importance, ground burnt clay of the same composition as the pipes may be substituted for the sand, with excellent effects if the clay be properly ground. It must not be too fine nor too

coarse, but must contain both coarse, medium and fine particles in suitable proportions. On this account it is best crushed in a crusher, followed by crushing rolls, as by setting these latter at a suitable distance from each other the correct proportions of the different-sized particles of material can be fairly easily obtained. The disintegrator and edge-runner mill are more adapted for fine grinding, and are less suitable for the reduction of burnt clay for use in preventing lamination.

When the porosity of drainpipes is not due to any structural failure, such as cracks and fissures, but is entirely owing to the large number of pores in the clayware, the best remedy will usually be found in the addition of a more easily sintering clay to that generally used, so that the more fusible clay may, by its fusion, fill up some of the pores, and bind the remaining particles closer together.

The use of such expensive materials as felspar, Cornish stone, and other easily fusible substances of a similar nature is seldom necessary, as their cost is often prohibitive, but surface clays can usually be obtained which are sufficiently rich in fusible materials to produce the effect desired.

The use of salt or other alkaline material is also to be deprecated, as being too intense in their action, and incapable of sufficient fine division to distribute them evenly through the clay. When these alkali holding materials form part of a more complex substance (as in the case of felspar) this difficulty of distribution does not occur, as it has already been effected by natural agencies to a degree far more perfect than can be accomplished by the hand of man. Hence the reason for using natural clays of lower melting point in relatively large quantities in preference to much smaller quantities of alkali fluxes.

Where materials are added artificially to increase the porosity of the clay (sawdust, coke dust, and finely powdered coal being commonly used for this purpose), and the pipes are incapable of standing the pressure test, the omission of part or all of these combustible materials will probably be the easiest way out of the difficulty, except in the case of those clays which cannot be burned without some non-clayey material. Such clays are not suitable for manufacturing drainpipes of the highest quality, and their employment for this purpose cannot be attended with satisfactory results.—The British Clayworker.

### MADE GENERAL MANAGER OF TILE WORKS.

At a meeting of the board of directors of the Zanesville, Ohio, Tile Company, Harry L. Moar, son of E. M. Moar, of Columbus, was elected general manager of the company, vice J. B. Owens, resigned. Mr. Owens was the original owner of the property and has grown wealthy. He will spend a number of months in travel.

Mr. Moar, who was formerly in the lumber business in Columbus, went to Zanesville about two years ago as secretary and treasurer of the tile company and he earned his promotion to general manager. Mr. Owens' interests in the plant were purchased by Mr. Moar and several Columbus capitalists, and the plant will be greatly enlarged. J. E. Blackburn of Columbus, is president of the company.

# CERAMIC BRICK COMPANY MAKING A FINE ARTICLE FROM POTTERY REFUSE

That the manufacture of high grade fire brick can be accomplished from the refuse of potteries has been thoroughly established is evidenced by the success which has attended the Ceramic Brick Company, of Harvey avenue, East Liverpool, O., which started in on a small scale some months ago and last evening at a meeting of the stockholders its capital stock was necessarily increased from \$10,000 to \$20,000.

So far but one kiln is being used, but another has been started and by fall it is expected that six will be built and the capacity per day increased from 3,500 to 21,000. At present but three tunnels heated by steam are used to dry the brick, but three others are to be added at once, which will amply take care of the increased output. Interested in the company are Pittsburg, Wellsville, East Liverpool and Steubenville parties, the president of the company being John M. McGord, of Wellsville, while Judge Frank Kerr, of Steubenville, is a director. In fact, it was to the latter that J. R. Frost, who manages the plant and who also discovered the process of making the brick, went after performing a series of successful experiments with the crushed saggers and other refuse from the potteries. Mr. Frost was formerly an engineer and has traveled from coast to coast. Arriving here two years ago, it did not take him long to discover the fact that all of the potteries had an immense amount of waste material on their hands which, if it could be utilized, ought to be the source of much revenue to them as well as being of invaluable use for some purpose. It occurred to him with his knowledge of furnaces and their need of brick capable of standing excessive heat that such could be made from this waste material and he accordingly had a half ton of the refuse ground at Golding's flint mill, which he took to McKeesport and where for the greater part of a year he made experiments and was finally rewarded by obtaining a brick capable of withstanding 3,800 degrees of heat. At once he set about incorporating a company, following which a plot of ground 100x270 feet was obtained near Anderson's Porcelain Works, which, because of the presence of a switch there, has been admirably suited for the purpose.

The brick so far manufactured are being used in the construction of the new kilns but beginning this month enough will be shipped to furnaces as to admit of their complete trial. The output will probably be sent entirely to two of the Pittsburg furnaces, who can use all and more turned out by it.

Mr. Frost has applied for a patent on his discovery and on several others which he has made, but has not yet begun their manufacture. All of these are now pending and favorable action is expected on all of them.

The brick manufactured is without a doubt the finest manufactured in the United States and are destined to become of great demand and may eventually revolutionize the entire fire brick industry.

It is the intention of the company when the plant has been enlarged to manufacture a building brick, crucibles and also large flooring tile which Mr. Frost thinks can be as easily made from the pottery refuse as the fire brick.

Eight men are now employed, but by fall there will be need of 20 to 25 men, while the beginning of the manufacture of other articles may cause the need of many more.

# THE EFFECT OF SCALE ON BOILER TUBES

The Engineering Experiment Station of the University of Illinois has just issued Bulletin No. 11, "The Effect of Scale on the Transmission of Heat Through Locomotive Boiler Tubes," by Edward C. Schmidt, M. E., and John M. Smolgrass, B. S. This bulletin describes a series of experiments begun in 1900 by the railway engineering department of the University of Illinois, to determine the relation of the heat loss, due to the scale thickness. The experiments comprise tests on single tubes as well as tests of the entire locomotive boiler.

The results of all the tests, plotted with reference to scale thickness, show great divergence in the heat loss, which is ascribed to differences in scale structure. The bulletin is of interest to all who have to do with the operation of steam boilers in localities where pure feed water is not available. The conclusions derived from the tests are summarized as follows:

1. That for scale thicknesses up to  $\frac{1}{8}$  in., the heat loss may vary in individual cases from insignificant amounts to as much as to or 12 per cent.
2. That the heat loss does increase with thickness in an undetermined ratio.
3. That mechanical structure of the scale is of as much or more importance than thickness in producing this loss.
4. That chemical composition, except in so far as it affects the structure of the scale, has no direct influence on heat transmission.

L. P. BRUCKENRIDGE.

# CLAIMED THAT PAVEMENTS WILL BE WATER TIGHT AND WILL BE MORE DURABLE

It is the intention of Bloomington, Ill., city authorities in charge of the improvement work to investigate the possibility of using an asphalt filler for the spaces between the bricks of the top courses of the new pavements. This filler is now in use in Decatur, Springfield, Champaign and other Illinois cities. It is said to be a success there and it is possible that the board of local improvements will go down to Decatur to see some of the filler on the pavements of that city.

The cement filler is put in when the pavement is first laid by pouring it at a temperature of 330 degrees between the courses of the brick. As the asphalt filler does not melt or soften much before a temperature of 220 degrees is reached it can be seen that it will not get soft and wabblily under our temperature which may sometimes reach 100 degrees in the sun.

The filler makes the pavement water tight. It does away with the many repairs that come from a brick being loose or some other cause that may allow the water to get under the pavement. The rains and snow of the winter had no more effect on it than the summer suns. It is water tight and so durable that pavements in use for ten years hardly have their joints worn out. All of these things are claimed for it by the various companies that make the filler and sell it under various names.

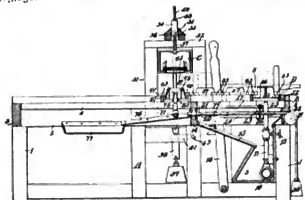
Another good claim for the filler is that it makes the pavement almost noiseless. The clatter of the solid brick pavement is lost as the vibration extending from brick to brick is lost in the asphalt filler. The asphalt itself is practically noiseless and it makes the brick about the same.

## CLAY RECORD.

## NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

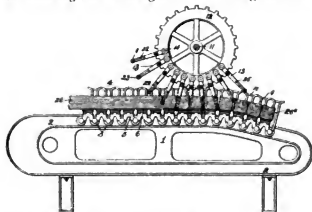
852,734. Machine for Glazing Pottery. Richard M. Matthews, Metropolis, Ill., assignor of one-half to Robert K. Lowry, Metropolis, Ill. Filed June 28, 1906. Serial No. 323,858.



Claim—In a machine of the character described the combination with a holder; of a counterbalanced tank thereabove having a normally closed outlet, and means for relieving the tank of the weight of the counterbalance to cause the tank to lower and its outlet to open by contact with an article on the holder.

853,573. Brick and Tile Cutting Machine. Jacob Bensing, Malinta, Ohio. Filed Aug. 29, 1906. Serial No. 331,795.

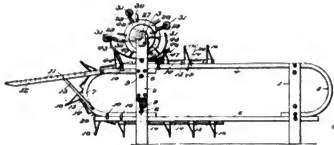
Claim—In combination, a revoluble cutter-frame having guide-members at its extremities, a cutter-wire carried by the cutter-frame and off-set outwardly from the axes of the guiding-members, and an endless carrier comprising a plurality of pivotally connected sections each having a U-shaped guide standard inclined slightly from a perpendicular and adapted to effect a positive guiding of the cutter-wire both in its descending and ascending movements through a column.



The combination with a carrier having guide-standards provided with spaced parallel guide-arms, of a revoluble cutter carrying a plurality of U-shaped cutter-frames, a spindle fixed at the end of each frame arm and having its inner end formed with a flange provided with an outwardly disposed notch the depth of which is less than the radius of the flange, a guide-roller carried by each spindle to co-operate with the guide-standards of the carrier, and a cutter-wire spanning each cutter-frame and engaging the notches in the associated spindles whereby it is offset from the axes of the guide-rollers, substantially as described.

853,858. Brick, Block or Tile Cutter. Byron E. Bechtel, Waterloo, Ontario, Canada. Filed Nov. 19, 1906. Serial No. 344,666.

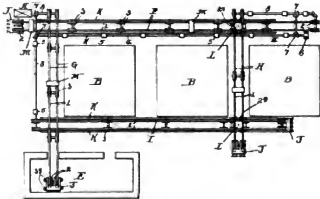
Claim—A cutting device for severing plastic material bars into sections of uniform length comprising a cutting reel, an endless traveling table consisting of pivotally united sections, each provided with a reel actuating portion, means whereby the spacing of said portions can be varied to vary the length of the sections cut from said bar, and means whereby the spacing of said portions is rendered uniform throughout a side table, whereby said sections cut from the bar will be uniform in length, substantially as described.



A rotary cutting reel having outwardly extending arms, a cutting wire stretched between and passed through said arms, means detachably securing said wire at the outer edges of said arms, said means comprising a mounted rotary spindle loosely mounted in ears at the outer edge of an arm and tending to move away from the outer face of the arm, a ratchet wheel and tooth for locking said spindle, one end of the wire wound on the spindle, the tension of the wire holding the wheel and tooth in locking engagement.

853,365. Brick-Conveyor. Charles H. Klein, Chaska, Minn. Filed March 15, 1906. Serial No. 306,178.

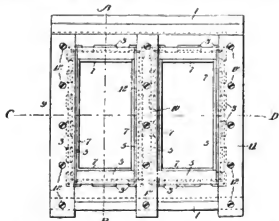
Claim—A conveyor, comprising, in combination, longitudinal cables spaced apart, on which pallets are adapted to be placed, transverse cables also spaced apart, means for driving said cables at the same surface speed to advance said pallets and means for lifting said pallets from one set onto the other set of cables.



A conveyor for pallets of brick, comprising, in combination, a main conveyor for pallets or similar articles, a transverse conveyor, means for driving said conveyers, and means for automatically lifting said pallets from said main conveyor to said transverse conveyor; each of said conveyers comprising endless cables spaced apart and traveling at substantially the same surface speed.

853,442. Interchangeable Mold-Box. William R. Cunningham, Bucyrus, Ohio, assignor to The American Clay Machinery Co., Bucyrus, Ohio, a Corporation. Filed Dec. 29, 1906. Serial No. 349,068.

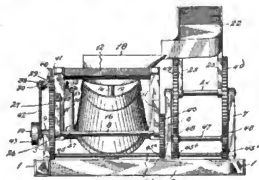
Claim—A mold box comprising inner and outer frames, said inner frame being interchangeable and removably fitting the outer frame, said frames having their adjacent sides tapering downwardly, and parallel and substantially fitting each other, said inner frame having its interior fashioned to conform to the article to be molded, and retaining plates fixed to one of said frames and having a long side extending horizontally over in contact with the top or thicker end of the other frame to removably hold the inner frame in place.



A duplex mold box comprising an outer frame having side and ends and a partition dividing said box into two compartments, the side walls of the partition and the inner walls of said sides and ends being tapered, an inner frame for each of said compartments, said inner frames having outer walls tapered conformably to the inner walls of the outer frame, the upper surfaces of the outer frame and of the partition being machined or recessed, retaining plates fitting said recesses and extending over in contact with the upper surfaces of the inner frames, and removable fastening means for said plates.

854,029. Mixing-Machine. Joseph D. Canlipell, Columbus, Ohio, assignor to The American Concrete Machinery Company, Columbus, Ohio, a Corporation of Ohio.

Claim—In a mixing machine, the combination with a supporting frame of a mixing drum, means for feeding the materials to be mixed to the drum, and a common mechanism carried by the supporting frame for simultaneously moving both the drum and the feeding means to unload the former and to move the latter into such position that it may be loaded.

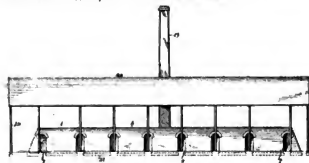


In a mixing machine, the combination with a supporting frame, of a tilting frame, a mixing drum rotatably mounted in said tilting frame, a hopper carried by the tilting frame and adapted to conduct material to the drum, a tilting trough adapted to conduct material to the hopper, and common mechanism for simultaneously tilting the drum to discharge

the contents thereof and tilting the trough downwardly into such position that it may be loaded.

855,384. Brick-Kiln. Baptiste F. Canavera, Coulterville, Ill. Filed Feb. 4, 1907. Serial No. 355,770.

Claim—In a continuous kiln, walls arranged to form a continuous elongated space, the end portions being substantially semi-circular, the outer wall being provided with openings leading into said space, and the inner wall provided with a chamber in communication with the chimney of the kiln and having its ends enlarged, means for dividing said space into individual compartments, and means for establishing communication between said compartments and said chamber in the middle wall, the end compartments communicating with the enlarged portions of said chamber.

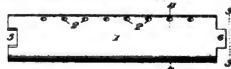


In a continuous kiln, walls arranged to form a continuous elongated space, the ends of which are semi-circular, means for dividing said space into individual compartments, the outer wall of the kiln being provided with openings, one for each compartment, and the central wall being provided with a chamber communicating with the chimney of the kiln and having its ends enlarged and semi-circular, the top of the kiln being provided with rows of perforations for each compartment and the chamber and its enlargements in the central wall being provided with openings, one for each of said rows of openings in the compartments, a removable flue on the top of the kiln for establishing communication between each of said rows of openings in the compartments and the corresponding opening in the chamber in the middle wall.

852,500. Process for Manufacturing Bricks. Laurence Elkins, Indianapolis, Ind. Filed Oct. 29, 1906.

Claim—In the process of manufacturing bricks, first introducing the sand into a cylinder and drying it; (2) pulverizing and slaking lime; (3) mingling hydrated lime with dried sand and carbonate of barites; (4) discharging the said mixture into a revolving pan in which it is thoroughly agitated and moistened; (5) withdrawing the moist material from the said revolving pan and pressing same in into requisite forms; and finally hardening them under a steam pressure in the hardening cylinder, substantially as described.

855,652. Drain-Tile. Herman Mori, Hartville, Ohio. Filed Feb. 10, 1907. Serial No. 358,290.



Claim—The herein described tile for drains having a flattened portion upon its outer surface and a plurality of openings at a point diametrically opposite the flattened portion, a pair of tongues at one end of said tile and a pair of slots at the opposite end thereof, said tongues and slots having tapered walls whereby when the tongues upon one tile are disposed into engagement with slots upon the next succeeding tile, said tongues and slots will be interlocked.



## CLAY RECORD.

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JULY 30, 1907.

No. 2

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

Subscribe today for The CLAY RECORD.

When a man sits down and hopes for the best, he is apt to get the worst of it.

Never explain—your friends do not require it and your enemies will not believe you anyway.

Nine times out of ten the fellow who is let in in the ground floor falls between the girders and lands in the cellar.

Getting replies to an advertisement is not one half of the battle. It is the follow-up system that makes the most customers out of inquiries.

All things come to him who waits; therefore while waiting you should be whittling out a good club to knock it down with when it gets here.

The CLAY RECORD is the only semi-monthly clay journal in America that is printed twice a month. You can receive it one year for the sum of one dollar. Don't delay sending for it. Delays are dangerous. If the value is not in it for you at the end of the year we will willingly refund your money. Subscribe now!

## BRICK MANUFACTURERS OPPOSE THE NEW RATES

Manufacturers of brick in Pennsylvania, Ohio, and other state, it is expected, will ask the Interstate Commerce Commission to give them relief from rates adopted by the Trunk Line and Central Freight Associations, to take effect on eastbound business Sept. 1.

Failing in this, it is proposed to seek an injunction to restrain the railroads from putting these rates in effect, and then have the matter adjudicated in the courts.

One firm in the Pittsburgh district is under contract to make delivery of about 800 cars of brick in the East after Sept. 1. As they cannot get the shipment under way before that time, the new rates will apply, and having made its contract on the basis of present rates a loss of \$25,000 is in prospect.

The prospective controversy concerning rates on freight has its origin in the recent ruling of the Interstate Commerce Commission in response to complaints of an Ohio manufacturer against the Pennsylvania lines and the Baltimore & Ohio, in which it was held by Commissioner Lane that all classes of brick look alike to the commission and must, therefore, be hauled at the same rate, instead of diversified classification for paving, building and fire brick, in the order named. As a result, the Trunk Line Association last week advanced all brick rates to the fire brick scale.

The Central Freight Association immediately concurred in this action, making a new rate of \$5 a ton, Chicago to New York, an advance of \$1, the present rate being \$4 on paving brick. From Pittsburgh it is now \$3 on fire brick and \$2.40 on paving brick, so that the increase is 60 cents a ton from the Pittsburgh district, which is considered exorbitant and restrictive of trade.

In consideration of the attitude of the commission, and as at present rates on paving brick are considered by manufacturers to be all that the traffic will bear, the brick men are hopeful their petition to the commission will not be in vain. Building brick manufacturers also object to the advance on their product, although it is less than paving brick.

## TO INVESTIGATE SAND LIME BRICK

A special committee of the National Fire Prevention Association has been appointed, headed by H. C. Henley, chief of the St. Louis, Mo., fire prevention bureau, to investigate the merits of sand lime brick. So far the association has refused to accept these as equal in fire resisting qualities to the clay brick and exhaustive tests will be conducted at the Underwriters' laboratories in Chicago. Over 150 factories are now engaged in making sand lime brick.

## BRICK PRICES LOWER

Hudson river bricks are moderate in price, under heavy arrivals, though the consumption is heavy—between seventy and eighty cargoes going out weekly. Light hards have been cheap all season, as there has been very little demand for them, for the work now in hand calls mostly for the best stock. Not so many "Hazard" bricks are being sold as two years ago, and the light shades again have the call for fronts.

## OBITUARY

William Dull, a prominent citizen and manager of the Dickson (Tenn.) Brick Co.'s plant, died from tuberculosis of the bowels. He was 55 years of age and came to Dickson when a youth.

James Hammond, a pioneer business man of Bolivar, Pa., and one of the first to develop the fire brick industry in Westmoreland and Clearfield counties, and the organizer of the Reese-Hammond Fire Brick Co., died at his home at the advanced age of 77 years.

Lawrence Gorman, superintendent of the Kohler Brick Company, Toledo, Ohio, died suddenly at his home, 413 Dorr Street. He attended business the day before and was found dead in bed when called in the morning. He was 54 years of age and lived all his life in Toledo.

Thomas J. Robinson, a member of the firm of Robinson Bros. Brick Manufacturers, died at his residence in Garfield, Pa. He was 55 years of age.

John Potts, aged 74 years, died at his home in Pittsburgh, Pa. He came to Pittsburgh 60 years ago and was engaged at the brickmaking trade nearly all his life.

## FIRE! FIRE! FIRE!

Fire destroyed the leading mill of J. P. Wilcox at Cadillac, Mich., and spread to the sheds of the brick-making plant, causing a loss of \$30,000.

The plant of the Van Hoser Brick Company at Pittcairn, Pa., was damaged to the extent of \$8,000 by fire yesterday.

A one-half of mile of sheds and buildings of the National Brick Co.'s plant at Weber Station, near Rogers Park, Ill., were damaged by fire to the extent of \$7,000. Much of the machinery was damaged. It is thought that the buildings were set on fire.

## DALLAS TO HAVE ANOTHER BIG INDUSTRIAL ENTERPRISE.

Another big enterprise that will have Dallas, Texas, as its headquarters was chartered at Austin and is called the Independent Press Brick & Tile company. The capital stock is \$500,000 and one-half of it is said to be already paid in. The company expects to have general offices in the Wilson building and will be officered by Dallas men, but the bulk of the capital comes from New York. One of the heaviest stockholders is a former Dallasite and now an eminent actor, Macklyn Arbuckle of Waddington, New York.

The incorporators are: W. H. Moser and J. M. King of Dallas, Daniel J. Ripley and George B. Dobson of Galveston and Macklyn Arbuckle. The charter is expected tomorrow and then officers will be chosen. Work is expected to begin within thirty days.

The company's plant will be located on a Frisco switch at Carrollton where considerable land has been bought. Mr. Moser says the shale to be used is as good as can be found anywhere. The company will manufacture face brick, building brick, hollow building tile, farm drain tile and other clay products. The daily capacity of the plant will be 125,000 bricks and, it is said, will be the largest and most complete in the southwest.

## ACCIDENTS, DAMAGES AND LOSSES

The referee in bankruptcy denied the petition to harm the Holland Brick Co., Moline, Ill., bankrupt. The referee held that the company was solvent.

At the Wilson Brick & Tile Co.'s plant at New Haven, Ky., a battery of boilers blew up, completely wrecking the works, killing Puss Brown, the fireman, and fatally injuring Dolan Hallbert and badly injuring four others.

J. H. Smith was almost fatally injured at the Caney (Kansas) Brick Works while applying for a job at the pit.

Edward L. White, Jr., was killed in the yards of the Salt Lake Pressed Brick Co.'s plant at Salt Lake City, Utah. He was employed to tend the temporing hopper at the machine which sprung a leak and completely buried him.

Guards at the camp of the Palmer Brick Co. at Atlanta, Ga., fired upon and killed two of three convicts that tried to get away from the camp.

Ferdinand Boucher, a North Brookfield, Mass., brick manufacturer has filed a voluntary petition in bankruptcy, liabilities \$2,003, no assets.

John Watkins, a man employed at the Row Brick Works at Newburgh, N. Y., had his hand badly injured in the machine.

High water put out the fires at the plant of the Flint Brick & Coal Co., Des Moines, Ia., and caused considerable loss and damage in that section of the country.

Floods of the rivers and creeks of Central Illinois, recently did much damage to many brick and tile plants, among them being the Geo. B. Roller and the Heckard & Son's plants at Canton, Ills.

## MAGNESIA CLAY IN ITALY.

Answering a California inquiry, Consul-General Hector de Castra, of Rome, advises that magnesite and magnesia clay deposits are found in northern Italy in the province of Turin. He adds:

Italy produces annually about 1,800 tons of sulphate of magnesium, 600 tons of calcinated magnesia, and 625 tons of magnesite. The Kingdom exports some 850 tons of sulphate of magnesium and imports 950 tons of chloride of magnesium, exporting about one-half of the latter amount. The domestic production appears to suffice for the home consumption and is apt to be increased according to necessities. Italy would not seem to offer a market for similar foreign products.

## THE PRISON IS TAXED BY ORDERS FROM PITTSBURG, TOPEKA AND OSAWATOMIE.

Leavenworth, Kans., July 26.—Warden Haskell has received a requisition from the State Normal school calling for 1,000,000 brick for the erection of a manual training school at Pittsburg, Kan.

There has already been \$3,000,000 ordered by the state board of control, for improvements and new buildings to be erected at the state hospitals at Osawatimie and Topeka and for the Soldiers' Orphans' home at Atchison.

These, with what will be needed for the new road, will tax the state prison plant to the limit of its capacity, but as the warden plans to keep the supply divided among all of the users each will have enough for immediate use.

## CLAY RECORD.

NATIONAL BRICK COMPANY THINKS  
INCENDIARY FIRED PLANT

Suspecting that their plant usually known as the Evans-ton plant, though within the Chicago limits, was burned as the result of a conspiracy, officials of the National Brick company have offered to buy incriminating information, publishing a newspaper advertisement reading as follows:

INCENDIARISM—NATIONAL BRICK Co. will pay \$1,000 reward to any person (including culprit) furnishing information which will convict instigator of setting fire to its Evanston brick plant on Friday morning last. Confidential communication can be sent to FRED WHITFIELD, attorney, Room 901, 172 Washington st.; telephone Man 1645.

From the talk of various persons interested suspicion must rest on either of two classes—labor men or some competing brick concern—and it is asserted that there has been more or less trouble with both.

B. F. Weber, president of the company, was the vice president and director of the Illinois Brick company, commonly called the trust, and Henry Busse and L. Reimer, secretary and treasurer respectively of the national concern, were directors of the trust until about three years ago, when they severed their connection with the larger concern and entered into business for themselves. They have two other plants.

From the day on which the National opened its first plant there have been more or less troubles—no obstacles to overcome, and the yards at North Kedzie and West Touhy avenues, just burned, were released only two weeks ago from an engineers' strike that had been in effect for a year. All the while, officials say, there had been trouble, caused by persons placing cinders in the bearings and other parts of the operating machinery, causing its breakdown and temporary closing of the plant.

Those offering the reward say that if the culprit himself tells who caused him to set fire to the place he will in addition to receiving the reward be made exempt from prosecution.

GEORGIA POTTERIES GOING OUT OF THE  
JUG BUSINESS

Feeling convinced that the present legislature of Georgia controlled by Prohibitionists, will abolish the liquor traffic in this state, two of the largest potteries in the state, whose product was confined almost exclusively to jugs, closed down their establishments.

Since the legislature convened orders for more than 35,000 jugs have been canceled, and a woodworking establishment having orders for bar fixtures worth \$20,000 today received a telegram canceling them.

FOURTEEN CONCERNS NOW IN OPERATION  
AT WEST BAY CITY, MICH

Illustrative of the waning timber supplies in Michigan, and the tendency to seek material other than wood for building purposes, the fact that in West Bay City alone there are fourteen cement block and cement brick and tile manufacturing concerns, all of which are operating their plants full capacity every day. The combined capacity is approximately 1,000 cement blocks every ten hours, all of which are disposed of for building purposes in the surrounding district.

## CHINA CLAY IN IRELAND

London, July 13.—A new industry is being developed in County Antrim, Ireland, due to the recent discovery of china clay near the village of Doagh.

The clay is said to be virtually identical in composition with that found in the famous pits of Cornwall, which have furnished the raw material for potteries all over the western world. A syndicate of Cornishmen has acquired the Irish pits. They expect in a short time to have 500 men employed in them.

## WILL DEVELOP CLAY DEPOSITS

The Virginia Clay & Material Co. of Farmville, Va., is reported to have acquired more than 2,000 acres of clay-producing lands along the line of the Tidewater & Western Railroad, and is making arrangements for the erection of a brick plant to cost about \$150,000. Contracts for machinery are said to have been awarded, and engineers are at present planning the necessary structures. It is stated that the company will employ the dry press process of manufacture, and will gradually increase the capacity of its plant to 500,000 bricks per day. The company maintains an office in Richmond, Va., with Mr. A. F. Matlock, manager.

BIG CONTRACT TO RECONSTRUCT  
METROPOLIS

The Redding (Cal.) Brick Company has just closed a contract to furnish the San Francisco contractors with 40,000,000 brick to be used in the reconstruction of the city. In order to fulfill this contract the plant of the company will at once be enlarged and the capacity will be increased to 75,000 a day. The capacity is now 20,000.

A force of twenty-five men will be employed and the machinery of the old Alta Brick Company at Etter is being moved to the brick yards just south of this city, where it will be installed and operated by electric power.

## NEW SEWER PIPE INTRODUCED

A new concrete sewer pipe is to be introduced and put on the market as soon as the machinery is received which it is necessary to use in producing the forms for the pipe's construction. This invention is designed for the construction of sewer pipes of the different standard dimensions from 30 inches up, the sizes varying in diameter as they increase in measurement every six inches.

It is manufactured in sections four feet in length, reinforced around the circumference with T iron or steel and reinforced lengthwise with twisted steel bars put into the tile so that the ends in each section lap one another and are keyed together, thereby making a permanent solid network of steel the entire length of the sewer.

The joints are so constructed that the lower half is filled from the inside of the sewer and the upper half from the outside of the pipe, making a perfect tight and sanitary joint. The makers say the tests have been made which prove the efficiency of the construction, and demonstrate that it may not only be used as sewer construction, but may be used as conveyor or transmitter of water for any desired distance.

A cold water pressure of 40 pounds has been applied to pipe 36 inches in diameter for the purpose of demonstrating the efficiency and practicability of the statement.

## CLASSIFICATIONS APPLIED TO THE ENGINEERING INDUSTRIES

The Engineering Experiment Station of the University of Illinois has recently issued Bulletin No. 9, "An Extension of the Dewey Decimal System of Classification applied to the Engineering Industries." This bulletin is in effect a fifth edition of the extension previously issued by the Mechanical Engineering Department. It contains the extensions previously worked out for mechanical and railway engineering, and in addition, a very complete extension for electrical engineering, and more or less complete extensions for bridge engineering, sanitary engineering, metallurgy and architecture. An alphabetical index of subjects adds to the usefulness of the classifications.

The decimal system of classifications devised by Mr. Helvil Dewey was intended primarily for the use of librarians in classifying and arranging books and pamphlets. It has, however, been used extensively by engineers, manufacturers and business concerns for indexing technical data of all kinds, catalogs, reports, drawings, etc. Bulletin No. 9 extends the work of Mr. Dewey to practically all fields of engineering industry, and presents a system of classifications of great value to engineers and those engaged in engineering industries. Copies may be secured by application of the Director of the Engineering Experiment Station, Urbana, Illinois.

L. P. BRECKENRIDGE,  
Director.

## MANUFACTURING ALONG THE HUDSON RIVER TO STOP SEPTEMBER 30th

The Hudson River Brickmaker's Association held an important meeting at the Palatine Hotel, Newburg, N. Y., and the attendance was large. The Haverstraw brickmakers were represented by Daniel DeNoyelles, John Peck, George Allison, Thomas Peck and Thomas Riley. Among the others present were: William K. Hammond, of Dutchess Junction, president of the Association; Robert T. Boyd, secretary; Christian Slade, of Kingston; Robert Main, of New York; Henry Corse, of Kingston; Edwin Brockway, of Fishkill; Percival Godden, of Catskill; Benjamin MacDonald, representing the Ulster Brick Company, and John B. Rose, of Roseton.

The brickmakers talked over the business generally, and fixed upon the time to stop manufacturing for the season.

It was the sentiment of the brickmakers that the yards should be closed for the season on September 30. It was also agreed that there should be no loading or shipping of brick boats on Fridays and Saturdays in order to relieve the Monday morning congestion. The same amount of brick will be shipped as heretofore, but instead of thirty or forty barges on Monday morning the shipments will be distributed over the week.

## HAS A BIG CONTRACT FOR BRICK

"The Underhill Brick Co." Haverstraw, N. Y., says the Record and Guide, "has been notified that the McAdoo building is ready for the Croton brick, and the first shipment from the works for this operation has been made. In all about 100,000,000 Hudson River brick will be used for this building. Croton brick will be used for the fronts, and these will be furnished by the Underhill Co. to the extent of about half a million."

## POTTERY NEWS ITEMS

The A. E. Hull Pottery Co., Crooksville, Ohio, has increased its capital stock from \$50,000 to \$100,000.

The Van Briggles Pottery Co., Colorado Springs, Colo., has just let a contract for a \$30,000 pottery building.

Harry L. Moar of Columbus, O., has been appointed general manager of the Zanesville, O., Tile Company.

John Donaldson will rebuild the Lone Star Pottery at Willsboro, Texas, which was recently destroyed by fire.

The Climax Pottery Co., Crooksville, Ohio, has consolidated with the A. E. Hull Pottery Co., under the latter name.

The Lewis County Pottery Co., Jatte Lew, W. Va., has been incorporated to make stoneware, sewer pipe and clay products.

J. E. McClurken of Buffalo, Ky., is interested in a pottery which is to be erected at Wales, Tenn. The plant will cost \$50,000.

The Portsmouth Pottery Company, Red Fork, Ind. Ter., has been organized with \$150,000 capital stock to establish a pottery.

The Grueby Pottery Co., Boston, Mass., has been incorporated with \$30,000 capital stock by William H. Grueby, William H. Graves and H. W. Belknap.

The Greeley Pottery Co., Boston, Mass., has been incorporated with \$30,000 capital with W. H. Greeley as president, Wm. Ashmont treasurer, and W. H. Graves, secretary.

The Gem Clay Forming Co., Sebring, Ohio, has been incorporated with \$10,000 capital stock. The stockholders are B. H. Greene, S. W. Greene, E. C. Albright, H. D. Weaver and M. Weaver.

The Cuba (Miss.) Brick & Pottery Co. has just received an order for eight cars of pottery in which they have commenced work. Experiments in making white-ware have been successful.

B. F. Harker, superintendent of the Homer Laughlin China Co., at Newell, W. Va., has resigned and Joshua Poole succeeds him. Mr. Harker contemplates a trip to Europe before resuming active work.

At the annual meeting of the Onondaga Pottery Co., Syracuse, N. Y., old officers were re-elected. E. B. Judson is president, James Pass, vice president, C. D. Avery, secretary and Geo. M. Williams, treasurer.

## THE ALEDO BRICK COMPANY WILL ENLARGE

The Aledo (Ills.) Brick & Tile Company are preparing to install a \$1,800 crushing machine at their plant. The purpose of this powerful mechanism is to grind to a dust every particle of rock, stone and gravel in the clay with the intention of manufacturing a glazed building brick. The company is adding new kilns to their yard and their machinery is turning out 25,000 brick a day. The Gillett Doorless, Grateless Firebox is being used in the kilns and a new record for burning brick was recently made when a large kiln of hard glazed brick was burned in forty-eight hours. Only twenty tons of coal was used. The company is laying a big run of tile. A large number of land owners will lay tile this fall.

**SAND OR LIME BRICK OR BLOCK NEWS**

The American Sand-Lime Brick Co., 77 Jackson Boul., Chicago, are shipping a complete plant to Georgia.

The Clite Engineering Co., Cleveland, Ohio, is planning and organizing a company to make sand-lime brick at Auburndale, Fla.

The North Dakota Tile Works, Fargo, N. Dak., located on East Front St., is now doing a rushing business. They manufacture cement tile.

The Camden Pressed Brick Company has been incorporated at Camden, N. J., to make sand-lime brick. The capital stock of the company is \$25,000.

W. D. Hitchcock of the Denver (Colo.) Pressed Brick Co., was in Chicago making purchases of brick machinery. He also visited the Jamestown Exposition.

Wick & Serum, Jackson, Minn., have purchased land and will build a cement, brick and tile works. New machinery has been ordered and the plant will be running in good order before fall.

The sand-lime brick works at Denver and Colorado Springs, Colo., are having a fine trade. In Denver, buildings and residences costing from \$50,000 to \$250,000, are being erected out of sand-lime brick.

The Denbigh (N. Dak.) Brick Co. have started up their sand-lime brick plant and are operating it night and day. They cannot supply the demand. The plant was installed by the American Sand-Lime Brick Co. of Chicago.

The Luverne (Minn.) Pressed Brick Co. have bought the plant of the Memphis (Tenn.) Granite Brick Co. and are removing same to Luverne. W. E. E. Green is the secretary of the company, and George Delate is also interested.

The Ideal Concrete Machinery Company, South Bend, Ind., have issued their July number of "Idealite," which is quite newsy and instructive. They have a prize competition of \$260 in it for the best and most artistic construction built of Ideal concrete blocks.

The Kansas City (Mo.) Gray Brick Company is looking for a site to build a sand-lime brick plant at Buffalo that will cost \$200,000. The company already has a plant at Bonner Springs, Kansas. B. N. Soper of Kansas City is the secretary and treasurer of the company.

B. F. Weaver has sued the Silex Brick Company at Wichita, Kansas, for \$3,500 damages for being struck in the nose and face by the lever of the brick press while assisting in making repairs. He wants \$2,500 for damages done to his face and \$1,000 for the pain he suffered.

The Intermountain Cement & Brick Co., Salt Lake City, Utah, has been incorporated with \$250,000 capital stock. John O. Sharp is president, T. R. Butler, Jr., vice president, and J. P. Sharp, secretary-treasurer. The plant will be located at Sugar City, Idaho, and will manufacture sand-lime brick.

The sand-lime brick plant at El Paso, Texas, is now turning out 50,000 brick daily. The plant is located on the G. H. & S. A. Rys at Dallas St., and 25 men are steadily employed. F. B. Stuart is president and general manager; A. Courchesne, vice president, and S. H. Sutherland, secretary and treasurer. W. F. Barnes of San Francisco, Cal., is one of the directors. The Schwarz system is used.

**MISCELLANEOUS ITEMS**

David Douglas will start a brick yard near the Lake View Cemetery at Eau Claire, Wis.

H. B. Fox, of Urbana, Ill., has taken a position with the Monmouth (Ill.) Brick Co., as an expert clayworker.

It has been officially announced that the Reece-Hammond Fire Brick Co.'s plant at Bolivar, Pa., will resume operations.

The new brick plant at Aberdeen, S. Dak., operated by Martin & Fish, has begun operations at the yard near the packinghouse.

Supt. A. S. Paine of the New England Brick Co. states that ten million more brick have been manufactured than last year at this time.

The New Birmingham Brick Co., Rusk, Texas, has been organized with \$50,000 capital stock, by A. S. Busby, J. S. Wrightman and W. B. Neeley.

The San Angelo (Tex.) Brick Co. has been incorporated with \$20,000 capital stock. Incorporators are C. H. Powell, Fred Beck and A. Balfanz.

The Unit Brick & Tile Co., Charlotte, N. C., will build their third factory at N. Smith and Tenth Sts. Paul Chatham is president of the company.

The Rives (Tenn.) Tile Co. has been incorporated with \$10,000 capital stock by W. C. Ferris, B. J. Wade, J. B. Caudel, W. M. Fox and D. H. Woody.

The Consolidated Brick & Tile Co., Price Hill, N. C., expects to increase the capacity of its plant this fall and will make sewer pipe, drain tile and terre cotta.

Payson Rich, of Gilbertsville, Maine, has purchased the brick plant on the Polar corner road near Mechanic Falls, of the Waterhouse heirs and will operate same.

The United Brick & Sand Co., Camden, N. J., has been organized with \$125,000 capital stock. Incorporators are A. L. Colver, John N. Colver and Peter Lemon.

Alexander Lindsay has sold his interest in the Fairmount (Ind.) Tile Co. to L. C. Lillard of Marion, who has taken possession and will enlarge and improve the plant.

The Daniel Goff Co., Millville, N. J., has been incorporated with \$50,000 to operate a sand, gravel and clay pit. Incorporators are Daniel Goff, R. M. Goff and E. P. Counsellor.

The Home Pressed Brick & Tile Co., Oakland, Cal., has been incorporated with \$100,000 capital stock by W. S. Cook, W. G. Johnson, Frank L. Dennis, E. Z. Ingram and J. W. Burnette.

The Hanover (O.) Red Pressed Brick Co. is to be reorganized and the money received will be used to enlarge the plant so as to supply the product promptly. C. H. Forry is the manager.

The Virginia Clay & Material Co., Farmville, Va., has purchased 2,000 acres of clay lands. Contracts for machinery has been awarded and engineers are preparing plans for the buildings. A. F. Matlock is the manager.

The Fayette Brick & Supply Co., Lexington, Ky., established by Greening & Frye, has changed hands and Charles Mc Connaghy, of the Monticello City National Bank, owns the majority of the stock. A. P. Stone of Monticello will manage it. The capacity will be doubled and pressed brick machinery added.

The Dallas (Texas) Hydraulic Brick Co. has been incorporated with \$5,000 capital stock.

Straight Bros., of Fonda, Ia., have completed plans for a new \$75,000 tile factory at Adel, Iowa.

The Bippus (Ind.) Drain Tile Co. is adding two new kilns to its plant which was made necessary to keep up with the demand.

The Great Western Brick Co., an auxiliary of the Great Western Lumber Co., Point Richmond, Cal., has begun operations in its new plant.

W. G. Bower of Vermillion, has shipped his brick making outfit to Pierre, S. Dak., and formed a partnership with A. W. Ewert of Pierre, and will manufacture brick.

The Liberty (Kansas) Shale Brick Co. has been organized with \$25,000 capital stock, and will erect a plant just north of town. Construction work will begin at once.

The Owensboro (Ky.) Brick Co. has been incorporated with \$100,000 capital stock. Incorporators are R. P. Farnsworth of Henderson; W. W. Farnsworth and J. W. McCulloch of Owensboro.

At a meeting of the stockholders of the Elk Fire Brick Co. at St. Marys, Pa., it was decided to greatly enlarge the plant, which was found necessary because of the increasing demand for the company's product.

The real estate of the Old Washington (D. C.) Brick Co., at Florida and Fifteenth streets, Northwest, comprising 55 acres has been sold to John Miller and will be subdivided and 200 houses built upon it at once. The consideration was \$150,000.

The Winterset (Ia.) Brick, Tile & Material Co. has been incorporated with \$10,000 capital stock.

G. E. Carlyle, of Portsmouth, O., who promoted the two Olive Hill (Ky.) Fire Brick companies, is promoting the third one for that town.

Robert Klose, Beatrice, Nebr., recently stated that their plant was very busy and says new machinery is to be installed and buildings built.

The Morris (Manitoba) Brick Mfg. Co. has been incorporated with \$20,000 capital stock. Directors are F. MacKenzie, W. M. Galbraith and J. M. Philips.

The Columbus (O.) & Hocking Coal & Iron Co. is considering the advisability of awarding the contract of mining the clay to be used in the new plant at Kachelmacher.

The Winfield (Kansas) Construction Co. has been incorporated by B. H. Albright, J. N. Shackleton, James Lorton, F. M. Benson and S. I. Pois, to build brick plants, operate stone quarries, etc.

The Porous Hollow Tile Co., New York, has been incorporated with \$20,000 capital stock by A. C. Hinton, of Grand View-on-the-Hudson; Allen Dunn, North Bergen, and T. K. Christie, New York.

The Acme Co., Ltd., Winnipeg, Manitoba, has been incorporated with \$100,000 capital stock to manufacture brick, tile and sewer pipe. The directors include J. Erzinger, Louis Serkan and A. D. Spronle.

Geo. S. Wheatley, manager of the Stockton (Cal.) Fire and Enamel Brick Co., which is now building a larger plant near the Pacific Window Glass Works, states that the plant will turn out its first batch of brick in September.

## The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 10% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

### CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln the arch only being built above this line.

There are no BAGGERS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

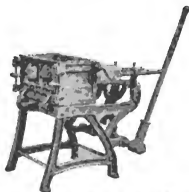
Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



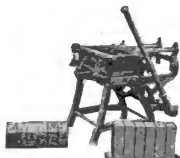
WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.



Model A--Ideal Concrete Block Machine



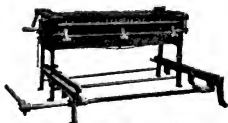
Ideal Concrete Mixer



Ideal Concrete Brick Machine



Ideal Cement Sill Mould



Ideal Special Sill and Lintel Machine

# IDEAL CONCRETE MACHINERY CO.

Manufacturers of  
"Ideal" Concrete Machinery

Block Machines, 16 to 24 in. lengths  
(Interchangeable)

Brick Machines, Mixers  
Sill and Lintel Machines  
Pier and Column Moulds  
Step, Sidewalk and Sill Moulds  
Ornamental Moulds for  
Shafts, Capitals, Vases, etc.

Largest exclusive manufacturers of Concrete Machinery in the world. Originators of the "down face" horizontal core concrete Block Machine: Model "A," 16 inch; Model "E," 24 inch. Machines are interchangeable to 8, 10 or 12 inch widths, and produce whole or split blocks in full or fractional sizes, within capacity.

Manufacturers of the IDEAL Sill and Lintel Machine, IDEAL Continuous Batch Mixer, IDEAL Cement Brick Machine, IDEAL Sill and Cap Molds, IDEAL Cement Step Molds, IDEAL Sidewalk Molds, IDEAL Ornamental Column Molds with Ionic or Doric Capitals, IDEAL Ornamental Spindle Molds, Porch Column Block Molds, Concrete Lawn Vases, Fancy Belt Courses, Ornamental Cais, Ornamental Wall Molds, and everything in regular and special designs.

More than *two thousand* of our Block Machines alone are being operated in the United States. Exclusively used by all up-to-date manufacturing plants. Importing houses of reputation and reliability are "IDEAL" agents in every country on earth. Largest exporters of concrete block machinery in the United States.

Write for Catalogue. Magnificently illustrated: Shows gross and net weights of all machinery and supplies; gives weights and cubic measurements of materials. Tells how to make exact calculations of cost of manufacture of Ideal Concrete Blocks in any locality. The most comprehensive encyclopedia on concrete machinery and its allied interests ever published. Sent free on application.

**Ideal Concrete Machinery Co.**

Dep't W South Bend, Indiana, U. S. A.  
Mussens Limited, Montreal, Canada Sole Agents for Canada

The plant of the Cobb Bros. Brick Co., southeast of Fort Worth, Texas, is ready to be started this week.

The Salina (Kansas) Vitrified Brick Co. has purchased additional machinery and will put in a new line of down-draft kilns.

Whitney & Holcomb's brick works at Caldwell, Idaho, is doing a rushing business. 600,000 brick are at present contracted for.

The Sheffield (Ia.) Brick & Tile Co. has been organized by E. J. Smith, pres.; L. B. Carhart, C. C. Carhart, G. E. for a large plant.

The Willmar (Minn.) Brick Co. is putting in permanent kilns, instead of their old-fashioned kilns, also are putting in drying sheds.

The Weir City (Kansas) Brick Co., which has been under construction since spring, is now turning out brick at the rate of 60,000 daily.

The Panama Portland Cement & Development Co., C. C. Godfrey, secretary, Batavia, N. Y., wants estimates for a cement plant to be erected in Alabama.

Harland & Kuester of Chicago, will put in a brick yard at Fort Pierre, S. Dak. The machinery for the plant has been shipped. 60,000 brick daily will be made.

The American Clay Products Co., Roanoke, Ill., will use a large tent under which to dry their tile during the summer months, instead of using their steam drying room.

John Diller, for 14 years superintendent of the Decatur (Ill.) Brick Co., has resigned his position and accepted a similar one with the Chamite (Kansas) Brick & Tile Co.

The Billings (Mont.) Pressed Brick & Tile Co. has been incorporated with \$20,000 capital stock by W. A. Talmage, Winter, and others. Work on the construction of the plant is under way.

The Norton Silica Brick Co., Norton, Virginia, have placed their order with the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., for a "Martin" Improved 6-ft. Wet Pan.

A strong company of local capitalists has been organized at Edmonton, Alta. Can., to manufacture brick under the Berw process, which is owned by Anton Berg Sons, Manning Chambers, Toronto, Ontario.

The Maine Clay Products Co., of Thomaston, Maine, have placed their order with the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., for a complete equipment for the manufacture of soft mud brick.

Deeds transferring 150 acres of ground has been made to the Evans & Howard Fire Brick Co., St. Louis, Mo. The company will erect a new plant on part of this land, which is at Clayton. About 200 acres have been bought at prices between \$350 and \$1,000 an acre.

Geo. H. and Edward K. Uhler, Marion, Ohio, are considering the developing, on a large scale, the clay lands on Frank Church and A. Bonnot, and has bought machinery the Uhler farm, which have been tested and found to be exceptionally good for sewerpipe and brick.

The Schmitt Brick Co., Columbus, O., who lately installed the "Martin" Patented Rack Pipe Steam Brick Dryer System, of 30,000 daily capacity, are now putting in additional 30,000 capacity "Martin" Dryers, installed by the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa.

L. L. Bingham of Esterville, Ia., is considering the putting in of tile plant at Terril.

W. E. Thompson of Macomb, Ill., is making tests of clay at Pittsfield, and a \$20,000 plant is possible.

Henry Edelman of Hooper, Neb., has bought the Schriber (Neb.) Brick Mfg. Co. and taken possession.

The Keysville (Utah) Brick Co., 161 Main street, Salt Lake City, has increased its capital stock from \$50,000 to \$100,000.

The Cooleemee (N. C.) Brick Co. has been incorporated with \$25,000 capital stock, by J. D. Gains, J. A. Tritt, A. B. Byerly and H. H. Davis.

The Rusk (Texas) Iron Co. wants estimates on the machinery for a 1,200-barrel Portland cement plant. W. H. Oatley is secretary of the company.

The Red Fork (Ind. T.) Brick Co. has been organized with \$100,000 capital stock by W. W. Hackett, president and general manager, and J. R. Ewing.

The machinery for the Baldwin County Brick & Pottery Co., near Milledgeville, Ga., has been bought, and M. M. Minter will be placed in charge of the plant.

The Green & Hunter Brick Co., Thurber, Texas, has amended its charter and changed its name to the Thurber Brick Co. The main office is at Fort Worth.

The Frost Mining Co., Jonesboro, Ill., has been incorporated with \$2,000 to mine clay and silica. Incorporators are S. B. Frost, O. D. Frost and Ursula Frost.

The Guthrie (Ky.) Brick & Tile Mfg. Co. has been incorporated with \$3,000 capital stock. The incorporators are Dr. J. M. Robinson, J. E. Leake and R. F. Warren.

## DIRECT HEAT

# DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**

62-64 William St.

NEW YORK CITY



## CLAY RECORD.

## BRICK PLANT FOR SALE

Brick Plant on three railroads, within two blocks of paved streets, in prosperous town. Address: EDWIN A. WILSON, Marine Bank Bldg., Springfield, Illinois

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, cheap. Have several better Mills for sale, and others.  
Kilns, Benders, Crushers, Drying Pipes, etc. If you wish to buy or sell write  
Brick and Tile Machinery  
Secor, Ill.

## A MANUFACTURING PROPOSITION

We install and equip complete plants for manufacture of Egyptian Plaster, Plaster, the popular new building material now in great demand. It is inexpensive and modern. Nailed on like boards. Only a small investment, and you have exclusive territory protected by patents.

Egyptian Sheet Plaster Co.  
Jackson, Mich.

## BRICK PLANT WANTED

Wanted to buy an interest in a pressed or paving brick plant located in Central States and having down draft kilns. Will make a position as manager with privilege to purchase an interest when found satisfactory.  
Address: "Manager" Care of Clay Record  
Chicago, Illinois

## FOR SALE

One power Press, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.  
A. American Enamelled Brick & Tile Co.  
Madison Ave. New York

## FOR SALE

Modern Soft Mud Plant, city 12000 good business, good prices, abundance of clay and sand. Address: WM. M. REEKS, Princeton, Ind.

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 1500 to 10000 per hour. Greatest bargain. Write for particulars.  
GREAT EASTERN CLAY CO.  
30 Cortland St., New York

## 50 PERCENT SAVED

Fifty percent and on the cost of your present system of drying. I will install my drying apparatus independent of your system, and to conjunction with it. Will cause no interference or delay. Terms either royalty or cash.  
H. H. WALSH  
1311 Lander St., Newburgh, N. Y.

## PLANT FOR SALE

A first-class tile and brick plant in best part of Iowa. Capacity 12000 brick or tile in proportion. Reason for selling, see. For particulars write to  
H. L. SWIFT, Riverside, Iowa

## A GOOD INVESTMENT

Men with capital and experience to start Brick & Tile plant. Good clay, good location, including K. R. track. Large home demand for tile. For particulars write  
Box 73, OKAHEA, MINN.

## FOR SALE

For Sale—25 Acres; 40 feet of Shale, in level of Fire Clay, 1 foot of Coal developed. Excellent conditions. A Railroad track. Price, \$15,000. Address:  
NEW CENTRAL COAL CO.  
Terra Haute, Ind.

## FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for brick at \$5 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood for hauling less than a mile. Plenty of labor and \$60,000 brick now contracted for. Good reason for selling. No competition.  
GEORGE BARNEY,  
Leesville, La.

## WANTED

Wanted Stone ware Potter—both wheel and Kilo men. Write to:  
KOKANE POTTERY CO.  
Clayton, Wash.

## FOR SALE

Two complete sets Brick-making Machinery, including Chamber's Brick Machine, Elevators, Clay Kolls, Granulators, Hoists, etc., also one Frey-Schickler Brick Machine, at present in operation.  
HILKINS BRICK CO.  
Chicago, Ill.

## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that has an interest in the company. NO FRENCHMENT.  
Care Clay Record, Chicago, Ill.

## MEN WANTED

Three (3) or four (4) good brick handlers, also two (2) brick kiln firemen, good pay and steady work for the right men. Address:  
Super, Muscovy slope Brick and Tile Co.  
Dickinson, N. D.

## FOR SALE.



Right and left-hand One, Two and Four's Way Switches, of various gauges, radius and weight rail, at special prices.  
THE ATLAS CAR & MFG. CO.  
Chesapeake, Ohio.

FOR SALE—CHEAP—New and re-laying rails. 12, 14, 16 and 18 pound. For prices address:  
ATLAS CAR & MFG. CO.  
Chesapeake, Ohio.

## KAOLIN FOR SALE

Have just discovered and offer for sale the first quality of Kaolin ever mined in Georgia, or the south.  
L. T. LEFF, Zenith, Ga.

## FOR SALE

Clay Disintegrator new \$5000 Tempering Wheel used only two seasons (3500)  
C. REUBEN KEMP  
306 Locust St., Williamsport, Pa.

## PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write:  
S. L. CLARK,  
Redfield, So. Dak.

## MACHINERY FOR SALE

Soft mud outfit manufactured by the American Clay Working Machinery Co., consisting of Upright stock Brick Machine, direct attached Pug Mill, Mold-Sunder Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Trolleys. All in fine condition; very reasonable price. Apply to:  
BALTIMORE VITRIFIED BRICK CO.  
Baltimore, Md.

## PARTNER WANTED

A good reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick.  
Address:  
DENNIS, care Clay Record  
Chicago, Ill.

## FOR SALE

A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 18 feet deep, light over burden of soft sand. Level plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For terms and samples, address:  
J. B. SALLEY, Attorney,  
Albion, S. C.



## MEN WANTED

Six men experienced in hollow block manufacturing, highest wages; no labor trouble. Apply to 605 Diamond Bank Building, Ohio Clay Products Co., Pittsburgh, Pa. or Ballietts, Ohio.

## MANAGER WANTED

Wanted—Manager and superintendent of a brick plant established a number of years and making high grade stiff brick. Must be competent to handle pecuniary affairs and make a brick understand machinery; good business ability; the management of men; have unquestioned habits; first class reference. Address in full and to confidence stating salary expected.  
X. V. Z. Care Clay Record  
Chicago, Illinois

## FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter, with 40 feet of off-feeding belt and separating table. This machine is brand new but we want the room immediately and will accept any reasonable offer.  
BAKER IRON WORKS  
Los Angeles, Cal.

## FOR SALE

A good Road Machinery Co.'s make, No. 4 Champion Crusher, in perfect condition, very little used; no reasonable offer refused.  
OHIO CLAY PRODUCTS CO.  
60 Diamond Bank Bldg., Pittsburgh, Pa.

## FOREMAN WANTED

Wanted a general Foreman for a No. 1 fire brick and farm train Brick Plant located in the Mississippi Valley. Must be sober, up-to-date and a hustler. Good wages to right party. Address:  
"P. T." GERM, INDIAN CLAY AGENCY  
Rock Island, Illinois

## FOR SALE

Startling sacrifice—Completely equipped ornamental brick plant, using high quality clay on Baltimore & Ohio Railroad in Ohio, has been bonded for \$50,000.00, for sale substantially for \$10,000.00 cash. Address:  
H. K. SELLER, 141 Broadway, New York

## BRICK PLANT WANTED

At Wrenna, Illinois, one million tons of material, located on "Y" of Illinois Central and Chicago Alton railroads. But tons of new material dumped daily. Will make good paving brick and from building brick, 4-6 mile adjacent. Plenty of artisan water. For information address:  
WENONA COAL COMPANY  
Wenona, Illinois

## DO YOU WANT TO SELL YOUR BUSINESS?

DO YOU WANT TO SELL YOUR BUSINESS? DO YOU WANT TO BUY A BUSINESS? If you want to buy, sell or exchange any kind of business or real estate anywhere at any price, address:  
FRANK P. CLEVELAND,  
1735 Adams Express Building  
Chicago, Illinois

## FOR SALE

One No. 26 special double shaft pug mill top and bottom discharge; 12 foot high; good condition, manufactured by American Clay Working Machinery Co. Sandusky Portland Cement Co. Sandusky, Ohio

## FOR SALE CHEAP

On the Pacific Coast, One Eagle Double Mold Press, practically new.  
BELLINGHAM BRICK & TILE CO.  
South Bellingham, Wash.

## POSITION WANTED

By an experienced Potter as Superintendent on turning, glazing, kiln cutting or burning.  
Address:  
N. Z. care of Clay Record  
Chicago, Ill.

## ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clay and water. Plant already erected. Information upon application. Water transportation all along Pacific Coast and Columbia River. No brick making plant within 50 miles.  
79 Chamber of Commerce,  
Astoria, Oregon



Vol. XXXI. No. 3.

CHICAGO, AUGUST 15, 1907.

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Single Copies, 10 Cents

### A BRICK IS A BRICK, AND A UNIFORM RATE MUST BE CHARGED

An important decision has been rendered by the United States Commerce Commission in a case in which the Stowe-Fuller Co., Cleveland, O., was plaintiff and the Pennsylvania R. R. Co., the Pennsylvania Co. and the B. & O. R. R. Co. were defendants. Its significance is discussed editorially in this issue. The decision was as follows:

1. Complaint in this case was directed solely against present differences in defendants' rates on fire, building and paving brick from Empire, Strasburg and other points in Ohio to New York city and other eastern destinations, but no attack was made upon the reasonableness of the rates on either kind of brick except as involved in the claim that any difference in the rates for the different kinds is lawful; Held, Upon the facts and circumstances of the case, that no such distinction between these three classes of brick, which are made of the same material, come out of the same kiln are nearly alike in color, and are of the same size and weight, exists as justifies a difference in rates. To hold otherwise would be to promote false billing by the shippers and to require carriers to make a practically impossible examination into the use of which each shipment of these brick was put.

2. Classification must be based upon a real distinction from a transportation standpoint. Aside from the difficulty in learning what use the brick were to be put to upon reaching their destination, the commission can not regard a classification as scientific, or a difference in rates as well based, which is altogether founded upon a distinction that has no transportation significance. Such a differentiation, if permitted and extended throughout the various classes of freight, would lead to an almost endless multiplication of rates, which could find no excuse save the use which might be made of the article transported.

The report of Mr. Lane, for the commission, follows:

#### REPORT AND ORDER OF THE COMMISSION

The complaint herein is directed solely against the present differences in rates charged by defendants on fire, build-

ing and paving brick from Empire, Strasburg and other shipping points in Ohio to New York and other eastern destinations, and the complaint is based upon the contention that for transportation purposes the three descriptions of brick constitute like traffic and should take the same rate. No attack is made upon the reasonableness of the rates on either kind of brick except as involved in the claim that any difference in the rates for the different kinds is unlawful.

Complainant owns or controls five plants for the manufacture of brick out of fire clay, one at Strasburg, O., on the Baltimore & Ohio railroad; one at Empire, O., on the Pennsylvania Co.'s line; one at Olive Hill, Ky., on the Chesapeake & Ohio railway, and one at Lock Haven, Pa., and one at Alexandria, Pa., both on the Pennsylvania railroad. It also purchases brick from other plants. It handled in 1906 about 80,000,000 brick, of which 60,000,000 were of its own production. Complainant is stated in testimony to be the second largest shipper of brick in the United States. The points of shipment mainly involved in the testimony are Empire and Strasburg, in Ohio.

The rates from Empire and Strasburg to New York are based upon the brick rates from Chicago to New York, as indicated in the following history of the rates on eastbound shipments: It appears that about the year 1877 the rate on all brick from Chicago eastbound was 20 cents. This was raised later to 25 cents, Jan. 1, 1900. Very shortly afterwards, upon representation of the paving-brick shippers, the rate on paving brick was reduced 2½ cents, and in May, 1900, those shipping building brick having been heard from, the scale from Chicago was made—fire brick, 25 cents; building brick, 22½ cents, and paving brick, 20 cents. About a month later the rate of 22½ cents was made to apply on both building and paving brick. In September, 1904, about four years later, the rates were made 25 cents on fire brick and 20 cents on both building and paving brick.

Strasburg, O., takes 70 per cent of Chicago-New York rates, and the rates from that point to New York are, therefore, 17½ cents on fire brick and 14 cents on building and paving brick. Empire, O., takes the 60 per cent basis, but

the Pennsylvania system fixes the rates from that territory on the basis of 22½ cents from Chicago, and the rates from Empire to New York are therefore 15 cents for fire brick, 13½ cents for building brick, and 12 cents for paving brick. A similar relation exists on eastbound shipments from other shipping territory on the Pennsylvania lines in Ohio and Pennsylvania for the three grades of brick shipped to eastern destinations. The complainant has been protesting to the carriers against the application of different rates on these grades of brick for several years.

The rates westbound are on a lower basis and are the same for brick of all descriptions; that is to say, from Pennsylvania brick-making points to all points in Central Freight Association territory the three kinds of brick take the same rate, and that rate is lower than the rate eastbound between the same points. From Williamsport, Pa., a brick-manufacturing point, the rate westbound to Canal Dover (near Strasburg), O., is \$1.75 per ton (83½ cents per 100 pounds), while the rate from Canal Dover to Williamsport is \$3.10 per ton, or 15½ cents per 100 pounds.

The defense claims that the \$3.10 eastbound rate extends east as far as Philadelphia, while the westbound rate from Williamsport applies from a group of which Clearfield may be taken to be the most westerly point of shipment, and that the comparison is unfair. However this may be, the fact remains that as between Canal Dover and Williamsport the westbound rates on all grades is \$1.35 per ton (6½ cents per 100 pounds) less than the rate on fire brick eastbound.

The rates between points in Central Freight Association territory, which is the transportation territory west of Pittsburgh and Buffalo and east of the Mississippi river, are generally the same for the three grades, but to this there are exceptions, some of which are shown in the accompanying table:

To—	Rates on brick in carloads. (Per net ton.)											
	From— Empire, Ohio, via Penn. Co.				Strasburg, Ohio, via B. & O.				Portsmouth, Ohio, via N. & W.			
	Face	Pav.	Fire	buil.	Face	Pav.	Fire	buil.	Face	Pav.	Fire	buil.
Chicago, Ill.	\$2.20	\$1.70	\$2.00	\$1.50	\$1.50	\$1.50	\$2.00	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50
Cleveland, Ohio	.85	.75	.85	.75	.85	.75	.85	.75	1.40	1.40	1.40	1.30
Cincinnati, Ohio	1.00	1.00	1.15	1.50	1.50	1.20	1.00	1.00	1.00	1.00	1.00	1.00
Toledo, Ohio	1.40	1.40	1.10	1.20	1.05	1.05	1.45	1.45	1.45	1.45	1.45	1.05
Detroit, Mich.	1.80	1.80	1.40	1.60	1.30	1.20	1.75	1.45	1.45	1.45	1.45	1.35
Evansville, Ind.	2.80	2.80	2.40	2.60	2.60	2.15	2.50	2.50	2.50	2.50	2.50	2.05
Indianapolis, Ind.	1.90	1.90	1.45	1.70	1.70	1.25	1.70	1.70	1.70	1.70	1.70	1.25
Peoria, Ill.	2.65	2.65	1.95	2.45	2.45	1.75	2.45	2.45	2.45	2.45	2.45	1.75
E. St. Louis, Ill.	2.90	2.70	2.35	2.70	2.50	2.15	2.60	2.50	2.60	2.60	2.60	2.05
St. Louis, Mo.	3.10	2.90	2.55	2.80	2.80	2.25	2.80	2.70	2.70	2.70	2.70	2.25

a. Paving brick rates from Strasburg—rates given are from Canton district. Tariffs do not specifically name Strasburg.

b. Face building brick from Portsmouth—except to Chicago, Detroit, East St. Louis, and St. Louis no specific rates in force on building brick shown in table, and fire-brick rates are used.

From certain points in Pennsylvania to points in territory known as Buffalo-Rochester territory the rates via the Pennsylvania lines are the same, and the testimony indicates that the differing rates apply on shipments to Buffalo-Rochester territory from Empire and Strasburg. The westbound rate from Pennsylvania brick industries to Cen-

tral Freight Association territory is made by adding certain arbitraries to the rate from Pittsburgh. Johnstown, Pa., for example, takes an arbitrary of 50 cents per ton above Pittsburgh. Eastbound the Johnstown rate is 30 cents below the rate to Pittsburgh.

The brick in question are all made from fire clay, which, when used for brick making, is composed of a kind of clay rock ground and mixed with soft clay, both of which are found in the same localities at numerous points in Ohio and Pennsylvania and at one or more places in New Jersey. All three kinds of brick are composed of the same material, and may be, and often are, burned at the same time in the same kiln. The hottest part of the kiln produces paving brick, the medium burned are building brick, and those layers subjected to least heat are fire brick. Under present rates and commercial and manufacturing conditions pertaining to brick manufactured in Pennsylvania, the percentage moving west is much larger than the percentage of Ohio brick moving east. The westbound movement of Pennsylvania brick is estimated at 40 per cent and the eastbound movement of Ohio brick is stated to be approximately 15 per cent. The various plants compete for the eastern and western trade.

The brick for each grade is generally the ordinary 9-inch brick of commerce, but paving brick for street use often take the block size, and fancy building brick may be much longer and wider but not so thick. But for the purposes of this report fire, building and paving brick may be taken as of the same size. The weight of each kind is 7 pounds or 3½ tons to the thousand. Shipments fill the car to the maximum load of 10 per cent above marked capacity. The carrier, therefore, renders exactly the same service whether fire, building or paving brick is shipped in carloads between the same points.

Complainant's fire brick ranges in value about as low as, if not lower than, its building or paving brick, taking all of its sales into account, but an extract from a report of the Geological Survey, put in evidence by the defense, shows that a general value of fire brick is somewhat in excess of the value of building brick, and that the latter slightly exceeds the value of the brick used for paving. In view of the policy of the defendants themselves in making the same rates for all kinds on westbound shipments, which practice also obtains in most instances throughout the central west and in shipments to the south, the difference in value can hardly be said to furnish a basis on which to predicate a difference in rates. The practice of invariably making different rates on the three classes of brick seems to be confined to shipments into and between points in Trunk Line territory, and to this there is the exception above noted from Pennsylvania railroad points in Pennsylvania to Buffalo-Rochester, N. Y., territory.

It is entirely practicable to use fire brick for cheap building purposes and building or paving brick for fire-brick use, and instances have occurred where one kind has been purchased or sold to be used instead of another kind, and where fire brick shipped as for building use have really been used

as fire brick, thus evading payment of the higher rate. Although interchangeable, each is usually confined to the individual use indicated by the name.

It may be fairly said in conclusion that the carriers in this case show no sufficient justification whatsoever for discriminating between the three kinds of fire-clay brick involved in this proceeding. The brick themselves are so nearly alike in color that, being the same size and of the same weight, they are practically indistinguishable the one from the other. To make different rates on each of these brick is virtually to permit the shipper to declare which of the three rates he chooses to impose upon the freight. The receiving agent of the railroad, unless an expert in fire-clay brick, could not tell which of the three rates to impose upon any one of the three varieties, except by inquiring what use was to be made of these brick. Aside from the difficulty in learning what use the brick were to be put to upon reaching their destination, we can not regard a classification as scientific, or a difference in rates as well based, which is altogether founded upon a distinction that has no transportation significance.

Moreover, such a differentiation, if permitted and extended throughout the various classes of freight handled by railroads, would lead to an almost endless multiplication of rates, which could find no excuse save in the use which might be made of the article transported. One class of lumber of the same measurement and of the same value and of the same general appearance and of the same weight as another might be given a distinct and separate rate. And so with building stone and cement and steel in certain forms, and many other commodities which will readily suggest themselves. Classification must be based upon a real distinction from a transportation standpoint, and we can find no such distinction between these three classes of brick, which are made of the same material and come out of the same kiln, as justifies a difference in rates. To hold otherwise would be to promote false billing on the part of the shippers, and to require the carriers, if they would avoid the penalty of the law, to make a practically impossible examination into the use to which each shipment of these brick was put.

We are not asked in this proceeding to determine what rate may be imposed as a reasonable one, and therefore shall leave this matter to be adjusted by the carriers, subject to review upon complaint by this commission.

It will be ordered that the fire brick, building brick and paving brick made of fire clay and here considered shall, as to the points herein involved and as to the defendant carriers, bear the same rate. Upon the foregoing report—

#### ORDER.

It is ordered, That the defendants, the Pennsylvania Co., the Pennsylvania Railroad Co., and the Baltimore & Ohio Railroad Co., be, and they severally are, hereby notified and required to cease and desist on or before the 15th day of August, 1907, and during a period of at least two years thereafter abstain, from their present practice of charging and enforcing rates, from Empire on the line of the defendant, the Pennsylvania Co., or Strasburg on the line of the

defendant, the Baltimore & Ohio Railroad Co., or from other points on their lines in the state of Ohio, to points in the states of New York and Pennsylvania which, from any of said points of shipment to any of said destinations, are different for the transportation of fire brick, building brick and paving brick made from fire clay and of the ordinary 9-inch size known to commerce; and to publish and charge, on or before said 15th day of August, 1907, and during a period of at least two years thereafter, the same rates from each of said points of shipment to each of said points of destination on shipments of fire brick, building brick and paving brick described as aforesaid; and said defendants are hereby authorized to make said rates effective upon three days' notice to the public and the commission, given in the manner required by law, the tariff containing notation that it is issued under this authority.

#### PROFESSOR W. F. M. GOSS OF PURDUE UNIVERSITY ACCEPTS AN IMPORTANT CHAIR AT THE UNIVERSITY OF ILLINOIS

Professor William Freeman Myrick Goss, who has just accepted the position of Dean of the College of Engineering of the University of Illinois is an engineer well and widely known both in the educational world as well as in the field of scientific and practical engineering.

Professor Goss was born in Massachusetts in 1859 and received his certificate of graduation from the Massachusetts Institute of Technology in 1879. He received the degree of Master of Science from Wabash College in 1884, and the honorary degree of Doctor of Engineering was conferred upon him by the University of Illinois in 1904.

In 1879 he was called to Purdue University to organize there the department of practical mechanics. Since 1890 he has been Dean of the Schools of Engineering and Director of the Engineering Laboratory at Purdue. As a result of his successful work at that institution he has become recognized as an authority on many aspects of the steam engine and has won for himself an international reputation in the field of railway engineering. He is a member of the leading engineering and technical societies of the United States and is the author of several engineering books and various monographs of a scientific nature.

Professor Goss is to take up his work at the University of Illinois September first and will be Dean of the College of Engineering and Director of the School of Railway Engineering. This school is a newly organized one and the University intends to develop in it a complete and comprehensive scheme of training for the railway service, including railway organization and operation as well as railway engineering. The four following professorships have thus far been established; that of railway civil engineering; railway mechanical engineering; railway electrical engineering; and railway administration. Professor Goss will direct and develop this school as a part of the college of Engineering and will do much towards making this college of the University of Illinois the finest technical school in the United States.

*A paper read before the Twenty-first Annual Convention of the National Brick Manufacturers' Association of the United States of America, St. Louis, February, 4-9, 1907.*

## BURNING BUILDING BRICK IN CONTINUOUS KILNS WITH PRODUCER GAS

BY C. G. GUIGNARD, COLUMBIA, S. C.

The subjects, "The Value of Producer Gas to the Brick Industry," and "Producer Gas as a Solution of the Brick Maker's Fuel Problem," were thoroughly presented and discussed at the convention in Philadelphia last year.

To those who are interested in this most important of subjects to the brick manufacturer at this time, and who did not have the privilege of attending that interesting gathering, or who have not read the proceedings, I would suggest that they refer to the records and see if they cannot find some instructive matter there.

Following those interesting papers of last year's meeting, our Secretary has asked me to give a short paper at this meeting on "Burning Building Brick in Continuous Kilns with Producer Gas," as gathered from my own experience as one of the pioneers in this country in this method of firing continuous kilns.

What I shall have to say will be purely from a practical point of view, or elating my own experience. In the first place, I am not competent to treat this subject from a scientific point of view, and in the second place, the subjects have already been so treated before this convention in papers above referred to.

The fuel bill is a serious problem with every brick maker unless he is so fortunate as to own his own coal mine or his own gas well. Like most all the members of this Association, I am not one of those fortunate ones.

We make common building brick, and ours is a red burning clay requiring above the average temperature for proper burning. This is evidenced by comparison with numbers of sample brick, of red burning clay, from various places, including Massachusetts, Canada and Utah, burned in our kilns. In almost every case when our brick, surrounding the samples, were just sufficiently burned, the samples were very much over-burned, and in some instances melted away.

Being far away from the coal fields and facing a continuously growing scarcity of wood in our country, we were forced to cast about for a cheaper method of burning than with the old style updraft kilns with fire-box on outside, which we were using exclusively up to about four years ago.

Naturally we turned to the continuous kiln for relief, for all of us know that the continuous kiln is primarily a fuel saver.

But then there was that common complaint of fire-marked brick from continuous kilns fired in the old way of putting the coal directly on and over the brick. This objection put this type of kiln out of the question for burning brick for our market.

The use of producer gas in the continuous kiln with the hope of overcoming this difficulty appealed to us, so we decided to make the venture, though this method was then only in its experimental stage.

We arranged with Mr. P. L. Youngren, who had conducted experiments along this line, to build a twelve compartment continuous kiln of his design for using producer gas for firing. In this kiln there are six compartments, adjacent to and connected with each other on either side, and a cross flue connecting the two compartments at either end, thus making the whole continuous. The stack flue is located centrally between the two sides, each compartment a duplicate of each other one, is about 16x30x12 feet, with flash walls along one side. The kiln is of down draft type and was constructed with an individual gas producer for each compartment. Each producer is started up as the heat in the kiln advances sufficiently into the relative compartments, and closed down after that compartment has been sufficiently burned and the next one well under way. The daily capacity of this kiln is thirty to forty thousand brick. This kiln has been in use for over four years; fires have not been out in that time, and it has given excellent results. In it practically all brick are burned hard and uniformly. The construction of the flues is such that the gas and air are thoroughly mixed as the air passes from one compartment to the next. With proper handling and care, every single brick can be burned hard and perfectly. There is no difficulty in getting any desired heat, and the fire is under perfect control all of the time.

The operation of this kiln, our first experience of the kind, was so satisfactory that we decided, a year after we had put it into service, to build another.

This second kiln is also of the Youngren design, but on essentially different lines from the first one, being a tunnel kiln, subdivided into twenty sections. The two tunnels of ten sections each, parallel with each other, and connected by cross flues at either end are 20 feet wide and 11 feet high, with the stack flue located between them. Also in this space between the two tunnels is located the central main gas flue leading the entire length of the kiln, approximately 200 feet, from a single gas producer located at one end. It was on this point of a single producer for the whole kiln that it was considered quite a prodigious venture, but we believed that it would work, and were bold enough to embark. The results have proved very gratifying.

The gas from this central flue is delivered to any kiln-section as the fire advances, through portable sheet-iron laterals. The special system of setting the brick, introduced in this kiln causes a thorough mixing of the gas and air at the points where gas is admitted, as well as forces the heat currents to travel in an upward and downward course through the ware from the point where the kiln is open to the open stack-damper.

In this kiln, as in the other, the heat is under perfect control, and almost any temperature may be attained. Brick are burnt practically all hard and perfect. The daily capacity of this kiln exceeds forty thousand brick, though this is all we have been able to get into it.

As to the practicability, advantages, and general economy of this method of burning brick, we can heartily recommend it. The superior quality of product, saving from

waste through breakage, over-burn or under-burn in kilns, saving in fuel, saving in labor, saving in fire risks, all we think make it attractive.

In either of our kilns we burn brick with approximately 300 pounds of coal per thousand, which we think is not very bad, though this could be somewhat reduced by installing an improved producer.

The cost of labor for burning at our plant has been very much reduced through the use of these kilns. We keep one man on each kiln all of the time and with ordinary supervision these two men keep the two kilns going, turning out seventy to eighty thousand brick daily, and these men have an easy job.

The kiln with single gas producer is a little more economical in fuel, and the fact that coal for this kiln has to be delivered all at one place and not having to start and close down fires is certainly an advantage. Also the wear and tear on a continuously fired producer is much less than on several that are frequently heated up and cooled down. We expect in the near future to equip our chamber kiln with a single producer.

Should we build another kiln for burning building brick or for face brick, it would be a continuous kiln, producer gas fired, with one central producer for the entire kiln.

#### WILL BOOM BRICK INDUSTRY IN NORTH DAKOTA

North Dakota is destined soon to become still more famous as a brick manufacturing state in the near future. A new brick making center has been established and a new species of brick is being turned out. Beneath the mines of coal operated by the Washburn Lignite Coal Co., at Wilton, in Burleigh county, has been found a peculiar red clay which is apparently excellent brick making material. Four kilns have recently been established at the mines and the manufacture of brick has been commenced.

W. P. Macomber of the Washburn Lignite Coal Co. arrived in Fargo from Wilton, bringing with him a sample of the new product. It is a fine pressed brick of a rich red color, and looks to be very good building material. So far the brick has not been given a trial on any buildings, as it is just being placed on the market.

As the supply of clay is practically unlimited in the vicinity of Wilton, the brick making industry is likely to become an important one there, and it is very possible that with this addition to the output of the Dickinson and Hebron kilns which is already considerable, brick in the near future will become so cheap in North Dakota that it can be used for building purposes in lieu of lumber. In view of the recent advance in the price of western lumber and the fact that lumber is steadily becoming more scarce this would be particularly fortunate.

#### THE USE OF CLAY FOR PAVING

Richmond, Tex., August 14.—Five years' use having fully demonstrated the value of clay as a plating for sandy streets, our citizens are at work surfacing another. It is the intention to continue until all main thoroughfares are treated.

#### RAILROADS CAN'T RAISE RUINOUS FREIGHT RATE ON BRICK BEFORE JAN. 1

The National Paving Brick Manufacturers' Association has succeeded in preventing the railroads operating in the territory of the Central Freight Association from raising the freight rates on paving brick until January 1. Judge R. W. Archbald of the United States Court of the Middle District of Pennsylvania, sitting in Scranton on Wednesday, granted an injunction restraining all railroads operating in or out of Pittsburgh from raising the rates before January 1.

The granting of the injunction is a very important legal decision in that it gives shippers standing in the courts to appeal from a raise in rates at any time the shipper thinks the rate is exorbitant. Judge Archbald granted the injunction after lengthy argument from George E. Shaw of Reed, Smith, Shaw & Deal and Gordon Fisher of Dalzell, Fisher & Hawkins, representing the railroads, and James S. Campbell representing the Brick Manufacturers' Association.

The entire controversy over the freight rates on paving brick has arisen from a decision recently rendered by the Inter-State Commerce Commission in the Stowe-Fuller case. It was decided by the commission that a brick is a brick, without any distinction as to quality and that the railroads had no right to charge different rates for handling them. "Pigs is pigs" was a similar case.

Heretofore the rate on fire brick for shipment has been 25 cents per hundred from Chicago to New York; on building brick 22½ cents per hundred and on paving brick 20 cents per hundred. After the Stowe-Fuller decision the railroads decided to increase the rate on bricks to 22½ cents per hundred without any distinction as to the quality of the brick.

This increase meant ruin to a majority of the paving brick manufacturers in the country, because of outstanding bids and contracts, which were based on a shipping price of 20 cents per hundred. The association at once decided to appeal not only to the Inter-State Commerce Commission to fix a fair rate for shipment, but to the United States Courts to prevent the putting into effect of the new rate.

Attorney Campbell appeared before Judge Nathaniel Ewing in United States Court for the Western District of Pennsylvania last week, but Judge Ewing begged to be excused from receiving the bill in equity asking the injunction, saying that he was an interested party, and did not feel he could pass on the issue. He communicated with Judge Archbald and by arrangement the Pittsburgh people went to Scranton and argued the case.

Judge Archbald ruled that, in view of the fact that a number of the paving brick manufacturers were threatened with ruin if the 22½-cent rate went into effect, he would grant the injunction, to be binding until January 1.

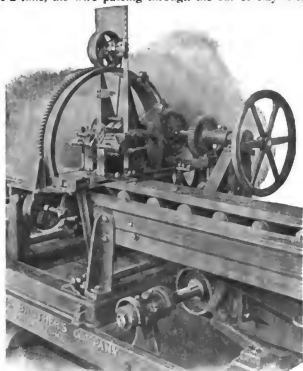
The paving brick manufacturers have already appealed to the Inter-State Commerce Commission for a hearing on the rate question and will ask the commission to fix a flat rate which will be equitable to all brick manufacturers. The hearing will probably not be until fall some time, as all of the members of the commission are away just now. The manufacturers hope the commission will do something to aid them, but at least Judge Archbald's decision has saved them for the present.

The National Paving Brick Manufacturers' Association represents at least 75 per cent of the paving brick manufacturers of the country and millions of money in capital. Its membership reaches from Maine to California and there will be great rejoicing when the text of Judge Archbald's decision is learned.

### A NEW AUTOMATIC SIDE CUTTER

The capacity of a clayworking plant and some measure of its profit depend largely on the efficiency of the cutting apparatus which divides the issuing clay column into brick. Cutting devices of every type have been placed on the market to meet with the increasing exigencies of high-speed demands and the Chambers Brothers Co., Philadelphia, Pa., has added a new automatic side cutter to its many lines and this addition possesses points of novelty and considerable interest. The Chambers Brothers Co. has been in the clay-working-machinery business for very many years and in the construction of its cutting machinery it has persistently adhered to its original idea that a continuous rotary cutter was the successful means of automatically cutting brick, and several forms of cutters on this principle have been placed on the market by the company and many of these machines are in successful operation at the present time.

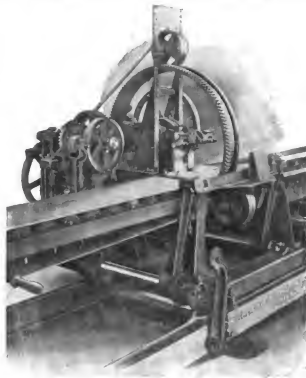
The new automatic cutter is designated as the No. 6 and is of the rotary type, employing a single wire stretched from side to side of a revolving ring. The cutter cuts one brick at a time, the wire passing through the bar of clay with a



Rear View of New Chambers Cutter

downward, shear movement which insures smooth edges to the brick. The bar of clay is carried from the die of the brick machine to the cutter by a carrying belt running over rollers, and the dead surface over which the clay has to slide at the cutter is reduced to a minimum, being only the thickness of about two bricks. The wire passes through a steel slit plate, the width of the opening being only about  $1/16$  of an inch. Provision is made for the discharge of stones, should any occur in the path of the wire, the brick being cut perfectly square and of uniform thickness. The net is unlimited.

The revolving ring and the slit plate have a slight oscillating motion and move forward during the passage of the wire through the clay, returning to their original position before the next cut is commenced. This oscillation is very slight and is secured by a perfectly calculated and adjusted mechanism by which is obtained a smooth, quiet motion devoid of jar or injury to the machinery. The speed of the cutter is under the control of a male and female friction, governed by the clay bar itself. The illustrations show a front and a back view of this cutter, which has already



Front View of New Chambers Cutter

been tested up to 110 brick per minute with entire satisfaction. The Chambers Brothers Co. feels very confident that the No. 6 rotary cutter will meet with favor from clayworkers desiring an efficient cutting apparatus in connection with machines manufacturing from 20,000 to 40,000 brick daily. Full information concerning this machine can be obtained upon application to the company.

### NEED ANOTHER BRICK PLANT

In the opinion of contractors, one of the greatest needs of Tacoma, Wash., is another brick manufacturing plant. What almost amounts to a brick famine exists on Puget Sound. The plants now in operation are worked to the limit to meet present demands and the price of brick has been forced about as high as the builders will stand. What the situation will be with the increase in building which the growth of the city demands is not hard to imagine.

Investors can find no better use for capital, from \$10,000 to \$100,000 than to invest in a brick manufacturing plant near Tacoma. The raw material exists in practically inexhaustible quantities. The demand for the finished prod-

## THE HORSE-POWER OF A CHIMNEY

Although every clayworker knows that the chief business of a chimney is to produce a draught whereby the fuel in the kiln or boiler furnaces may be properly burned, it is seldom that the real value of a chimney is appreciated because of the failure to regard it as a machine.

The power or work done by any machine working under the best conditions is always measured by comparing it with the number of theoretical horses which would be required to do the same amount of work in the same time. We use the term "theoretical" horses because the power of the living horse varies with each animal and at different times, and the term "horse-power" was devised by the great James Watt, as the result of experiments which he made on a number of horses working under different conditions. His experiments were not carried out with that accuracy we look for nowadays, so that the expression "horse-power" is now a purely arbitrary measure, which like the term "foot" has a definite value of its own, but no definite relation to the animal from which it was originally obtained.

Just as it is customary to measure the capacity for work of all machines in terms of horse-power, so also a chimney—being a machine for the movement of air and fine gases, just as a pump is a machine for the movement of liquids, and a locomotive for the movement of solids—may have its capacity for work measured in similar terms, and the expression "the horse-power of a chimney," though unusual, is nevertheless quite correct.

The case of a ventilating fan which is used for precisely similar purposes as a chimney, makes the comparison all the more clear, and enables the clayworker to calculate the relative values of natural (i. e., chimney) and artificial (i. e., fan) draught.

## IN THE CASE OF A FAN.

Many and oft-repeated experiments have shown that under the best conditions coal of average quality requires from 12 to 15 times its weight of air if it is to be properly burned, and that in ordinary practice, even with a skilful and conscientious stoker, the larger of these two amounts is the least which can be efficiently used in practice.

This means that for each ton of coal consumed there must be the means provided for supplying it with 15 tons of air, measuring when cold about 436,000 cubic feet. As many boilers in clayworks use two tons of coal a day of ten hours, this is equivalent to about 1,460 cubic feet per minute. A kiln will burn more fuel than this, and will require a proportionately larger quantity of air.

Not only so, but the air on entering the furnace becomes warmed, and during the combustion greatly heated, and at the same time mixed with the gases formed by the combustion of the fuel, so that its volume becomes about four times as great, and a boiler delivering 6,000 cubic feet of gases into its chimney is not at all uncommon in small works.

Supposing that a fan, instead of a chimney, were to be employed to move this large quantity of air, what horse-power would be needed to drive the fan? This will, of

course, depend on the pressure of water-gauge reading of the fan used; this can be assumed to be  $\frac{1}{2}$  in.

Then the volume of air multiplied by the water-gauge reading, and then by 5.2, and divided by 33,000 will give the horse-power required to move the air. Hence,

$$\frac{6,000 \times 2 \times 5.2}{33,000} = 2 \text{ horse-power,}$$

but doubling this to allow for friction and other losses in running, we may take it that about 4 horse-power would be required in practice.

To determine the effective size of a fan for this work the area of its inlet ("equivalent orifice")—

$$\text{Vol. of air} \times 0.37$$

$$\frac{1,000 \text{ } \checkmark \text{ water-gauge}}$$

in other words,

$$\frac{6,000 \text{ c. ft.} \times 0.37}{1,000 \checkmark 2}$$

$$1.6 \text{ sq. ft. inlet area for fan.}$$

In actual practice a fan with a somewhat larger inlet—possibly even double this size—would be installed for safety in working and for allowance for friction, etc.

The other characteristics, such as speed and diameter of the fan, can also be calculated, if necessary, but in practice it is far better to consult the makers, after telling them the number of cubic feet of air per minute the fan is intended to move.

## WATER GAUGE READINGS.

The extent of the draught, whether produced by chimney or by fan, is most easily measured by means of a water-gauge, consisting of a U-shaped tube, containing water, one end of the tube being connected to the chimney and the other left open. Various modified shapes have at different times been placed on the market in order to reduce the errors of reading such small variations as occur in ordinary practice, and the clayworker should purchase his gauge ready-made, and not try to rig up one for himself.

Although many firemen are acquainted with these draught-gauges, in some form or other, they are quite unable, in the majority of cases, to find out whether they ought to work with a sharper fire or not from the indications of the gauge alone, nor can they tell whether the chimney shows a sufficiently high gauge-reading or not.

To calculate the gauge-reading from the height of the chimney, it is only necessary to multiply the height of the chimney by 4 1-3, and to divide it by a number produced by adding 273 to the temperature of the gases in the chimney, this temperature being measured in Centigrade degrees. Thus, if the average temperature inside the chimney is 300 deg. Cent. a water gauge attached to the chimney when the latter is working should show a reading of 1 1/2 in. for a chimney 200 ft. high.

This calculation may, in fact, be simplified in common use, where a good stoker is employed and the gases in the chimney have the average temperature just given (300 deg. Cent.), by considering that the water-gauge should give a reading equal to the height of the chimney (in feet), divided by 133.



## THE VELOCITY OF CHIMNEY GASES.

In order to ascertain the speed at which the gases are traveling through a chimney it is necessary to employ an instrument for the purpose (an anemometer), or to calculate it from the water-gauge readings.

The former method is the more accurate, but the latter is the more commonly adopted in clayworks. Under ordinary conditions it is sufficiently accurate to assume that the velocity of the gases in a chimney (measured in feet per second) is equal to 65 times the square root of the water-gauge readings. Hence, if the water-gauge reading be 1 in., the velocity of the gases would be 65 ft. per second, and if—

Water gauge in inches.	Velocity of gases in feet per second.	Velocity of gases in feet per minute.
$\frac{1}{2}$	45	2,730
1	65	3,900
2	91	5,460
3	110	6,600
4	130	7,800
5	143	8,580
6	162	9,720

The velocity of the air in feet per minute, multiplied by the area of the chimney at its smallest part, will give the number of cubic feet of gases passing through the chimney per minute. Consequently a boiler chimney delivering gases at a speed of 3,000 ft. per minute (corresponding to 1 in. of a water-gauge reading) will require to have an internal diameter of at least  $1\frac{1}{2}$  sq. feet in the smallest part if it is to carry the 6,000 cubic feet of gases which even a comparatively small boiler produces. A chimney of 4 ft. diameter and 12 square feet area, on the other hand, can accommodate the combustion of over 10 tons of coal per working day, if matters be so arranged that the draught-gauge reading is maintained at 2 in.

## THE SIZE OF A CHIMNEY.

Hence, in calculating the size of a chimney for a given boiler or kiln, it is first necessary to ascertain the number of cubic feet of gases to be passed through it per minute at the time of the hardest working of the boiler—this depending on the amount of fuel to be burnt per minute, and roughly calculable as 80 times the number of pounds of fuel burned per minute—then to ascertain (from a knowledge of the temperatures to be reached) what amount of draught-gauge reading will be most efficient, and what diameter or height will be most convenient for the chimney.

Thus, with a consumption of 15 lb. of coal per minute, producing 1,200 cubic feet of gases, at a gauge reading of 1 in., with an average temperature inside the chimney of 300 deg. Cent., should require a chimney 133 times the draught-gauge reading, namely 133 ft., or say 150 ft., to allow for internal losses.

To build a chimney of this height it would have to be of considerable width, so that its internal area would be far more than was necessary for the combustion of the amount of coal specified, and a damper would have to be used in order to reduce the area of the chimney to such an extent as would enable it to propel the gases at the necessary

speed and maintain the gauge reading at the desired figure.

If the damper be opened too wide, too much air will be admitted to the fuel may be great if the fireman is not used to the fuel, and as this will be heated to no purpose, the waste of fuel may be great if the fireman is not sufficiently careful. The only true way of ascertaining whether too much air is being admitted is to analyse the flue gases—a procedure which is impracticable in most clayworks—but much may be done by a careful fireman who understands the appearance of his fires when too much or too little air is being supplied, particularly if he watches his draught-gauge carefully.

In deciding at what draught pressure it is best to work it is necessary to make a few experiments, as many chimneys are built without any serious regard to the rate at which the fuel will be burned in the furnace, and are generally built too large rather than too small. It therefore follows that the theoretical gauge-readings, based on calculations such as those just given, may, and in many cases will, be much higher than is necessary in practice, owing to the chimney being too high, it having been built so in accordance with local regulations or at the fancy of the builder or owner. The calculations are of value, as showing the least sized chimney with which it is possible to work, and no man who had any idea that his works might need enlarging at any time would build a chimney just to fit his present demands.

Even in a continuous kiln the chimney is frequently much larger than is actually necessary for the combustion of the fuel, but the enormous quantities of air used and of steam produced during the earlier stages of the firing of such a kiln render a large chimney necessary, more especially as its effective size can be reduced to any extent by the use of dampers, whereas if built too small in the first place it could not so easily be enlarged.

## COMPARING CHIMNEY AND FAN.

In order to decide whether it is desirable to build a chimney or to install a fan when a new boiler or kiln is being built, a number of considerations are necessary. When a chimney is incapable of doing the work demanded of it, the installation of a fan as a supplementary draught-producer is a comparatively simple matter, as the additional volume of gases to be dealt with can be calculated with reasonable accuracy.

When, however, a new yard is being opened, the calculations are apt to become little more than elaborate guess-work, and consequently of but little value.

The only way in such cases is to make a sufficiently liberal allowance for all possible needs, both present and future, and on this basis to compare the chimney with the fan. Thus, supposing that an average of 50,000 cubic feet of gases, at a temperature of 300 deg. Cent., be taken as the basis of the calculations, and that a draught equivalent to  $\frac{1}{2}$  in. gauge reading is sufficient to maintain the correct temperature in the system. (It is of course clear that the greater the draught the hotter the system, provided that there is sufficient fuel to combine with the additional air

thus supplied.) The horse-power required for the fan under these conditions will be (as previously explained)—

$$\frac{50,000 \times \frac{1}{2} \times 5.2}{33,000} = 4 \text{ horse-power.}$$

But for the reasons already given, an 8-h. p. fan would have to be used in practice. The cost of these 8-h. p., and the cost of repairs and depreciation of the fan, can then be calculated from the particulars supplied by the makers.

For the chimney several small calculations are necessary, viz., (a) the velocity of the moving gases (calculated from the draught-gauge) = 45 ft., per second, or 2,730 ft. per minute; (b) the area of the chimney calculated as follows: a chimney of 1 square foot area carries off 2,730 cubic feet per minute, so that a chimney of 20 square feet area will carry off 54,600 cubic feet of air per minute, of rather more than the 50,000 cubic feet actually supplied. So that a minimum area of 20 square feet will be required; (c) the height of the chimney (calculated from the draught-gauge reading) =  $133 \times \frac{1}{2} = 67$  ft.

Hence, in practice, a chimney of 50 ft. height and 5 ft. diameter is the smallest which could be built under the circumstances. The cost of this distributed over a sufficient number of years to give a correct depreciation value will give a figure comparable to the annual cost for the fan.

The actual figures will differ in different districts and cannot be given here, but sufficient has already been written to enable the clayworker to ascertain the comparative values of these two methods of draught production for himself.—*British Clayworker.*

#### STATEMENT TO BOND-HOLDERS OF THE UNITED STATES BRICK COMPANY

The following statement was issued on Monday by President Gery and Treasurer Hoffmeister, of the United States Brick Company:

To the Bondholders of the United States Brick Company:

In view of the default of the United States Brick Company in the payment of the interest due upon its bonds July 1, 1907, and of inquiries of certain bondholders, indicating a misapprehension of the relations of the United States Brick Company to the Montello Brick Company, whose stock it owns, a brief and simple statement of the facts seems due to the parties interested for their own information and to correct such misapprehension.

The Montello Brick Company, incorporated in 1899 with a capital stock of \$1,050,000, acquired the Montello plant near Sinking Spring, erected the Wyomissing plant near Reading, and leased the plant at Perkiomen, and purchased certain land adjoining the leased property.

The Montello Brick Company has no bonds or other obligations, excepting those covered in the lease of the Perkiomen plant.

#### THE MONTELLO BRICK WORKS.

The Montello Brick Works was incorporated in 1902 with a capital stock of \$1,500,000. This company leased all the property of the Montello Brick Company, erected the Oaks plant for the manufacture of bricks in tunnel kilns

under a patented process covering Eastern Pennsylvania and considered of great value because of their capability of making a uniform quality of bricks at a reduced cost.

The fund provided for the erection of the Oaks plant was seriously impaired by the necessity of rebuilding the Wyomissing plant and the Perkiomen plants, which were destroyed by fire, and the duty of replacing which under the terms of the lease devolved upon the Montello Brick Works.

The Montello Brick Works has no bonded debt.

#### U. S. COMPANY ORGANIZED.

In December, 1904, the United States Brick Company was incorporated under the laws of Delaware as a holding company acquiring the patents for all the United States, excepting Eastern Pennsylvania, under which the Oaks plant was erected, and purchased from the holders thereof all the capital stock of Montello Brick Works at par, giving in exchange a collateral trust six per cent bond upon which the interest has not been earned and therefore has not been paid. The United States Brick Company never sold any bonds nor received any money on account thereof—the whole issue of bonds having been exchanged without any money consideration.

The United States Brick Company advanced a large amount of money for the completion of the Oaks plant, the cost of which greatly exceeded the estimate, and the long delay in the completion of which deferred its ability to earn the expected income, though the interest upon the United States Brick bonds was constantly running until the company found itself unable to carry the burden, and the inevitable result ensued.

Neither the Montello Brick Company nor the Montello Brick Works issued any bonds, which is industrial wisdom, enabling the company to suspend operations from time to time when overstocked or when business conditions do not warrant the operation of the plants without having the burden of incessant fixed charges.

#### TAKES THE CONSEQUENCES.

The United States Brick Company did not take as wise a course and now it takes the consequences. A debtor has no standing with his creditors except upon the basis of his contract; he must pay his debts or surrender his property, and the creditors are the only judges as to the wisdom of enforcing the terms of the contract. The United States Brick Company is not an operating company and is dependent altogether upon the income applicable to dividends of the companies of which it is a stockholder, and as the measure of its ability to pay is dependent upon its income, it does not matter to its creditors whether they receive that income in the form of interest or of dividends.

#### DEPENDENT ON THE FUTURE.

In this business emergency the company informally suggested to its bondholders as good policy for all parties to convert the bonds into preferred stock. Most of the bondholders have provisionally assented to this plan, in the hope that upon being relieved from its fixed charges and other indebtedness, the company may be put upon a sound business footing, the provision or stipulation being that all the bondholders should assent, which is a necessary condition as no bondholder can be deprived of his legal remedy under the deed of trust securing his bond.

The success of the United States Brick Company is dependent upon further conditions, upon the erection of other plants and the enlargement of its business, and there is no reason why its expectations may not be ultimately realized if its bondholders will depend upon the earnings of the company as a return for their investment.

ALBERT A. GERY, President,  
JOHN F. HOFFMEISTER, Treasurer,  
United States Brick Company.

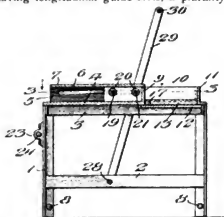
## CLAY RECORD.

## NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

855,382. Brick-Molding Machine. Newton H. Bolton and James Belisle, Minneapolis, Minn. Filed Oct. 13, 1906. Serial No. 338,867.

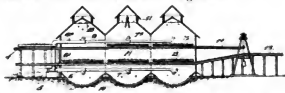
Claim—A brick molding machine comprising a supporting frame, a table carried thereby, said table being provided at its rear with upwardly extending longitudinal flanges, forming the front and rear walls of a mold chamber, the front wall being formed with a plurality of slots, said table also being provided in front of said front wall with side flanges having longitudinal guide slots, a plurality of par-



titions arranged for movement through said slots in the front walls to be projected into and out of the mold, a pallet removably arranged within the mold chamber, said pallet being of a width somewhat less than said chamber, a filling piece between the front wall of the mold and front edge of the pallet, a pair of rods connecting the forward ends of the partitions, the ends of the rods forming guides movable in the slots in the guide flanges, the ends of one of the rods being extended beyond the flanges to provide journals, a rock shaft having crank arms beyond the sides of the frame, links connecting said arms with the journals, and an operating lever having a slot therein receiving one of said journals.

855,853. Drying Apparatus. Emil C. Horst, San Francisco, Cal. Filed Sept. 14, 1905. Serial No. 278,381.

Claim—In a drying apparatus, a series of compartments having perforated traveling floors, an air-forcing mechanism and ducts disposed respectively above and below said floors, with upwardly and downwardly discharging passages, and a concave floor and dome-shaped ceilings into which the heated air is discharged said concavities serving to distribute and return the heated air through the floors.

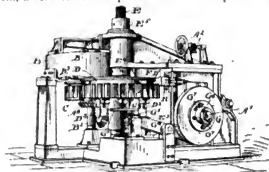


In a drying apparatus, a series of compartments having superposed tracks, means for delivering heated air above and below said tracks and controlling its delivery, a series of perforated floors mounted upon wheels and adapted to contain the product to be dried, said floors being movable through the compartments upon each level, means for transferring the floors from one level to the other, said means comprising a track extending outwardly from the lower

level, a hinged tiltable track extending from the upper level and normally connecting with the lower track, said upper track being movable to allow cars to pass beneath it to transfer from one level to the other.

855,222. Brick-Press. George W. Balkwill, Cleveland, Ohio, assignor to The Semistee Company, Cleveland, Ohio, a Corporation of Ohio. Filed March 10, 1906.

Claim—A mechanically operated brick press comprising a rotating mold cylinder having therein a plurality of mold cavities, a plunger in each cavity and vertically reciprocable therein, a removable face plate fitted to the top of the mold



cylinder and having openings therein above the mold cavities, a projecting ledge around the lower part of each mold cavity below the lower limit of movement of the upper face of the plunger, lining plates fitted about the four side walls of the mold cavities, said lining plates being provided with shouldered recess along the longitudinal edges and fitted in the mold cavity above said projecting ledge in such manner that the shoulders come underneath the edges of the face plate overhanging the mold cavity, and adjusting devices carried by said ledge whereby the lining plates may be held up in such position that their upper edges are flush with the surface of the face plate.

852,908. Fireproof Material. Keizo Sakurai, San Francisco, Cal. Filed April 5, 1906. Serial No. 310,023.

Claim—A fire refractory material comprising a refractory vehicle in two forms, one a coarse granular mass and the other a fine powder, suitable proportions of this fine and coarse stuff being mixed with a suitable proportion of an easily fusible binder and water, subjected to high pressure and baked.

A fire-proof material comprising approximately 40% of a coarse granular fire-proof vehicle, approximately 20 to 30 mesh, approximately 40% of the same is powdered form, approximately 150 to 200 mesh, approximately 20% of an easily fusible binder and sufficient water to make a paste, said paste subjected to a pressure of approximately 5,000 pounds to the square inch, and this pressed product baked to approximately 1,000° C.

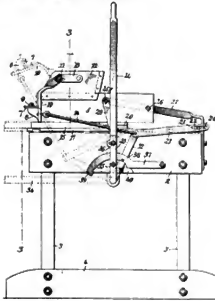
857,624. Brick-Molding Machine. Thomas C. Holt, Minneapolis, Minn. Filed July 23, 1906. Serial No. 327,311.



Claim—In a molding machine, the combination with a supporting frame, of a reversible base plate supported thereby, and a pair of wall forming mold plates formed on zigzag rectangular lines, and one of which wall forming mold plates is secured to and is reversible with said reversible base plate, and the other of which is independently supportable from said supporting frame, substantially as described.

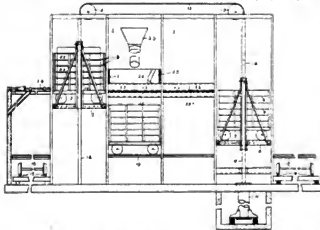
855,716. Brickmaking Machine. Earl L. Martin, Woodburn, Iowa. Filed June 29, 1906. Serial No. 324,018.

Claim—A brick making machine comprising a mold having a hinged front wall, slidable bottom and rear walls, and stationary partitions and side walls.



A brick mold having side walls, a front wall pivoted at a point above the top thereof, a rear wall slidable between said side walls, an arm, means for oscillating it, means connecting said arm to the front wall, and means connecting the arm to the rear wall, said last mentioned means including a lost-motion device whereby when the arm is oscillated in one direction the front wall is swung away from the side walls before the rear wall slides between them.

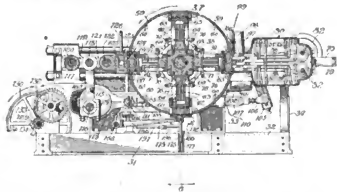
857,143. Filling Mechanism for Brickmaking Plants. Frank Zazelmeyer, Bay City, Mich. Filed July 30, 1906.



Claim—A filling mechanism comprising a plurality of elevators, a filling box interposed therebetween having a mold receiving space therebeneath, trucks adapted to support a plurality of molds in tiers, the trucks removably received on the elevators, means for conveying the trucks to and from the elevators, and a pusher arranged in alignment with the mold receiving space beneath the filling box, one of the elevators adapted to bring successive tiers of the truck loaded with empty molds into alignment with the pusher and filling box, the passage of the molds beneath the filling box adapted to crowd the previously placed molds onto the truck removably carried by the remaining elevator.

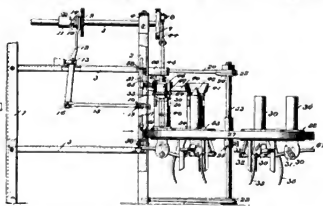
857,364. Brickmaking Machine. Frederick P. Rosback, Benton Harbor, Mich. Filed Feb. 28, 1907. Serial No. 359,875.

Claim—In a brick-machine, the combination of a rotatable drum, molds disposed at intervals about said drum, tampers supported at one point adjacent to the periphery of the drum, a plurality of eccentric-actuated reciprocating tampers supported at one point adjacent to the periphery of the drum to act against the material to be compacted in a single mold, receiving-means for the product of the machine supported at a third point adjacent to said periphery, and drum-driving means constructed and arranged to rotate said drum intermittently to register molds thereon with said points in each partial rotation of the drum.



In a brick-machine, the combination of a rotatable drum, molds disposed at intervals about said drum, each mold consisting of a fixed bottom-plate and a wall-structure supported to extend about said plate and movable back and forth thereon, tamping means supported at one point adjacent to the drum, a power-driven presser-head reciprocally supported at another point adjacent to said periphery, receiving means for the product of the machine supported at a third point adjacent to said periphery, drum-driving means constructed and arranged to rotate said drum intermittently to register molds thereon with said points in each partial rotation of the drum, and means constructed and arranged to co-operate with said drum-driving means to move said wall-structure at said receiving point away from its contents.

858,303. Tile-Molding Machine. James I. McLimans, Sherburn, Minn. Filed March 7, 1907. Serial No. 361,114.



Claim—In a machine for molding hollow tiles, the combination with a platform provided with an opening, of a core movably mounted in said opening, a jacket adapted to be placed on the platform and surround the core, and a plunger having a solid head adapted to be forced into the jacket to compress the material therein and simultaneously force down the core as the material is compressed.

## CLAY RECORD.

## CLAY RECORD.

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Vol. XXXI.

AUGUST 15, 1907.

No. 3

"I like to read American advertisements. They are to themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

Subscribe for the Clay Record today.

Conceited people would not be so had if they didn't spend so much time in trying to monopolize all the lime-light.

Some people advertise in a journal because the paper is nicely printed, wise ones advertise for results. They are what count.

Probably the easiest task a business man is ever called upon to accomplish is to induce an employe to accept an increase in salary.

There is no more danger of not making an advertising campaign pay than there is of not winning out in any detail of your business.

"Show me the business man who gives no thought to his business, who neglects his trade or technical journal and remains in ignorance of the important things going on in his line, and I'll show you a man who trusts somebody to do these things for him or who will have some vain regrets when he wakes up."

## BUILDING OPERATIONS FOR JULY

The long prevailing prosperity in building operations continues with little abatement, practically none if Greater New York be eliminated from the calculations. Official reports from fifty-five leading building centers collected by The American Contractor, Chicago, and tabulated, shows a loss in twenty-six cities and a gain in twenty-nine as compared with July, 1906. The losses are comparatively light from a monetary standpoint, with the exception of New York city, which brings down the total decrease to 11 per cent. This decline must be chiefly ascribed to the enormous operations of recent years and the consequent supply of new buildings. The following figures show the percentage of gain in some of the cities: Allegheny, 17; Cambridge, 94; Chicago, 10; Cleveland, 21; Chattanooga, 276; Davenport, 233; Dallas, 44; Denver, 21; Detroit, 48; Duluth, 24; Evansville, 240; Milwaukee, 40; Mobile, 37; Nashville, 15; New Haven, 12; Omaha, 22; Paterson, 110. Losses are as follows: Baltimore, 39; Birmingham, 60; Buffalo, 17; Harrisburg, 7; Hartford, 42; Indianapolis, 16; Kansas City, 17; Louisville, 78; Los Angeles, 26; Minneapolis, 37; New Orleans, 31; New York, 23; Philadelphia, 7; Pittsburg, 43; Pueblo, 30; St. Louis, 7; San Francisco, 28; Syracuse, 33; Salt Lake City, 33; Topeka, 21. The total loss as compared with July, 1906, is 11 per cent. The gains and losses are widely distributed and show a response to demands for new buildings.

## FALL BUSINESS GOOD AT COLUMBUS

Fall building promises to be very heavy, according to contractors and realty men. This is due to the lateness of the start and the fact that the weather was not permissible for outdoor work until late in the spring. Another thing that operated against building this year was the scarcity of brick, many contractors being utterly unable to get material of that description for their purposes. The direct result will be that building activity will continue until late in the fall and if the weather is at all favorable it may last well up into the winter. At the office of the building inspector the past few days great activity in the issue of permits prevails, which is highly encouraging to a continuation of prosperous times for months to come.

## PROPERTIES AND TESTS OF FULLER'S EARTH

A new theory of the properties of fuller's earth is presented by John T. Porter in a paper published by the United States Geological Survey in its "Contributions to Economic Geology, 1906" (Bulletin 315). The work reported in this paper was done in the laboratory of Charles Catlett, of Staunton, Va., at his expense, in connection with the investigation of the subject for private persons, and the results have been placed at the disposal of the Survey.

Mr. Porter's paper gives an account of the geology and origin of fuller's earth, states its character and composition, describes the physical and other tests made by him, discusses the theories of other writers as to the nature of the material, and presents his own, together with its practical application.

## OBITUARY

Joseph H. J. Croxall, vice president and manager of the Croxall Pottery Company, East Liverpool, Ohio, one of the oldest manufacturers in East Liverpool is dead. He was 57 years old and leaves a wife and three children.

Dudley B. Hutchins, died at the home of a relative in Pittsburgh, death was due to a recent operation. He was formerly engaged in the brick business at Portsmouth, Ohio, but later was the manager of the York Portland Cement Co., which was newly established.

Charles Graham, who established the Graham Pottery on Metropolitan ave., Brooklyn, N. Y., died at Sheepshead Bay, where he was spending the summer. He was 53 years of age and leaves a widow and two children.

## FIRE! FIRE! FIRE!

The plant of the Carey Brick Co., 15th and Hossick sts., Troy, N. Y., suffered a small loss by fire caused from an overheated kiln.

The plant and machinery of the Concord Brick Mfg. Co., at Natchez, Tenn., was completely destroyed by fire. The loss is estimated at \$15,000, insurance \$8,000. Plant will be rebuilt at once.

One of the stables owned by the Boston Brick Co., on Webster ave., Boston, Mass., was destroyed by fire causing a loss of horses and buildings of \$4,500.

Fire broke out in the kiln sheds of the Crookston (Minn.) Brick & Tile Co., and in one-half hour there was nothing left of them but cinders and ashes.

The Brick Works at Cumberland, Wis., owned and operated by S. Douateller, burned to the ground, causing a loss of \$4,000 with no insurance.

## WILL MAKE BUILDING BRICKS IN TOPEKA OF COMMON BLACK DIRT

The Kansas Srenolith Co., incorporated under the laws of Arizona and having exclusive right in Kansas to manufacture strenolith, a new building material, has opened offices on West Sixth street, Topeka, Kansas, and will establish a plant in Topeka within a short time with machinery for manufacturing its product. H. M. Kingsley, of Washington, D. C., is in charge of the office of the local company. H. L. Shirer is president; H. A. Kingsley, a brother of H. M. Kingsley, vice president; Sheriff J. M. Wilkerson, treasurer; A. B. Poole, secretary, and S. S. Ott, H. M. Kingsley and Wilder S. Metcalf, directors. All are Topeka men except H. M. Kingsley and General Metcalf.

The company claims to be able to manufacture building material superior to stone out of sand, common soil or almost anything. Out of the dirt moved by digging a cellar they can manufacture enough material for the walls. When the company's plant is in operation the company intends to bid for the dirt removed from excavations where building is in progress. In many instances what to do with this dirt is a serious problem to the contractors.

Ordinary black dirt or sand or other substance is treated with chemicals that convert it into stone.

## ACCIDENTS, DAMAGES AND LOSSES

The Builders Brick Co., Chicago Heights, Ill., has given a trust-deed on 40 acres of land to secure a loan of \$30,000.

Fred Schad, an employe of the American Tile Co., Zanesville, O., fell from a moving street car and was fatally injured.

Bocv Bivens, a life convict in the camps of the Cherokee Brick Co., at Macon, Ga., made his escape. He is said to be a desperate character.

W. F. Soisson, of the Soisson Fire Brick Co., Connellsville, Pa., has been made receiver for the Reese-Hammond Fire Brick Co., of Bolivar, Pa.

James Kelly, aged 42 years, met a horrible death by being ground to pieces at a brick machine at the Booth & Flinn Brick Works at Pittsburgh, Pa.

Action has been begun to foreclose a mortgage on the White Stone & Brick Co.'s property at Fond du Lac, Wis. This company was formerly the Moser Lime & Stone Co.

Patsy Sandy, age 39 years, an Italian employe of the Yonghioghlyen Brick Co., McKeesport, Pa., was almost blown to pieces by an explosion of powder which he was using in blasting.

The Aslop Engineering Co., Los Angeles, Cal., has gone into the hands of the receiver. Mr. Douglas who holds 80 per cent of the indebtedness agrees to assume same and give 18 months secured notes.

Frank Wolf and his father began suit for \$18,000 damages against the Columbus (O.) Clay Mfg. Co., for the loss of three fingers on the hand of the son and the loss of the son's services.

Charles L. Smith the manager of the American Brick & Tile Co., at Mason City, Ia., met with a very serious accident while superintending the building of their new plant. In raising an angle iron it slipped and fell upon him striking his hip.

## ALLENTOWN BRICK MANUFACTURER SERIOUSLY HURT—WOMEN ESCAPE INJURY

Allentown, Pa., Aug. 15.—David Mattern, a brick manufacturer, is in a precarious condition with injuries sustained when he was thrown from his carriage yesterday afternoon. He was driving with Mrs. Mattern and Mr. and Mrs. E. A. Saylor, when an automobile came along.

Mr. Mattern gave the automobile more than half the road, but it is said the chauffeur turned toward them. The horses shied and threw the carriage into a ditch, the men falling out. In the runaway that followed Mr. Mattern was dragged by the feet until the horses stopped. The women escaped injury by clinging to the carriage top. Mr. Saylor suffered slight bruises. He saw the number of the automobile which, it has been discovered, is registered in Berks County.

The Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., is installing a complete equipment for the manufacture of soft mud brick at Pembrook, near Lansdale, Pa., for Mr. Geo. M. Fox, Jr.

## CLAY RECORD.

### PROMPT SHIPMENTS AND GOOD MACHINERY BRINGS RICH REWARD

The below written letter is only a sample of the letters that are regularly received by the Chisholm, Boyd & White Company of Chicago. The receiving of supplies and repairs promptly is no little item. It works wonders on the right side of the ledger when the annual accounting is being made, and when one purchases a machine or machinery they should always consider the record the firm has in attending to their old customers and in delivering the repairs and supplies in time.

Messrs. Chisholm, Boyd & White Company,

Cor. Fifty-seventh and Wallace Streets,  
Chicago, Ill.

Dear Sirs: We are informed today from the plant that the gear that they ordered from you had reached there.

We cannot overlook an opportunity to express to you our many thanks for the very prompt dispatch that you have responded to in forwarding the few little orders that we have given you, and which are a great convenience to us in operating our plant.

The writer is in charge of several large Texas Institutions, and transacts business in an aggregate sum of a very large amount; we have never though had anyone to pay as much attention to the quick dispatch of our business as your good selves.

We also wish to tell you that our present superintendent, Mr. C. T. Jackson, informs us that in his long experience he has operated only a half-dozen presses of different makes other than yours but for best results all the way round, none will equal the Chisholm, Boyd & White Four Mold Special.

It will no doubt interest you to know that the writer has secured four fairly good size orders for our brick out of five contracts he went after. We are expressing you some samples of our new Kiln No. 2.

Three or four contractors have visited our plant and say that there is nothing equal to it in the South.

With assurances of our best regards and highest esteem, we remain,

Yours very truly,

TENAS FIRE BRICK CO.,

Per KAL SHWARTZ,  
Secretary and Treasurer.

### TO MANUFACTURE PAVING BRICK AT KIRKSVILLE

The necessary capital has been raised and a company organized for the purpose of manufacturing paving brick at Kirksville, Mo. The leading business men of the city are interested in the enterprise and expect to be ready to burn the first paving brick in a short time.

The plant will be operated at the J. M. Ivie & Sons plant and the material for the construction of the kilns has arrived. It is to be hoped that the venture will prove a success as it will mean a great saving on the cost of paving if the brick can be manufactured at home and will also furnish employment for a number of men. A paving brick plant here will mean paved streets in Kirksville at a reasonable cost.

### VENEER TILE BEING BURNED

The first kiln of tile is now being burned at the new plant of the Fischer Veneer Tile and Manufacturing company on the Maysville pike, Zanesville, Ohio. This new company, which is composed of Cincinnati capitalists, has erected a fine manufacturing plant on the site of the old Arcenciel pottery and as has been stated will engage in the manufacture of veneer tile.

These tiles will be used instead of weather boarding or brick for the outer walls of buildings being particularly adapted for use on residences. The sample tiles so far burned have been all that could be desired and the company now has a number of orders from local and foreign parties.

The company has spent something in the neighborhood of \$15,000 in improving the property which they purchased on the Maysville pike and in addition to new buildings has installed new machinery and has a plant which is well equipped throughout.

This is one of Zanesville's new industries which bids fair to grow to great proportions. The members of the company are very well pleased with the outlook for the business and like their location here. Several western cities have made them alluring offers to seek new locations but so far none of these has been considered since the location here is all that could reasonably be wished.

### JAMES KELLY IS CAUGHT ON A BELT AND CARRIED INTO GRINDING HOPPER

James Kelly, aged 42 years, married, of No. 48 Lombard street, Pittsburgh, Pa., met a horrible death by being mangled in a separator of a brick machine at the Booth & Flinn brick yards on Ruch's Hill.

He was shoveling loose earth on a belt which carried it to a hopper used to grind and separate it. During the absence of other employees, he was caught on the belt and carried to the hopper where the machinery killed him.

### PROTECT LIVES, HOMES AND PROPERTY WITH "UTICA" AND "CHILDS" EXTINGUISHERS

O. J. Childs Co., Utica, N. Y., were very busy recently shipping a car load of 500 of the "Childs" Hand Chemical Fire Extinguishers and 3,500 chemical charges to Colon, Panama, to the Panama Canal Commission.

The above order was secured after the most severe test ever given the subject of Fire Extinguishers. This test was made by the government at Washington. The "Childs" machine stood a hydrostatic test of 500 pounds held for twenty minutes, and the extinguisher expanded only one one-hundredth part of an inch under this enormous pressure, winning out against all other competitors.

They have furnished each of the following railroad companies over 700 of their Fire Extinguishers:

N. Y. C. & H. R. R. Co.  
Interborough Rapid Transit Co.  
Delaware, Lackawanna & Western.  
Baltimore & Ohio.

Also the Borden's Condensed Milk Co. have had thousands of their machines. Not one single word of complaint has ever come to them from above parties that their machines were not entirely satisfactory.

### BRICK COMPANIES MUST STOP UNDERMINING STREETS

Poughkeepsie, August 14.—Justice Morschauer, in a decision and opinion handed down yesterday, administers a body blow to the big brick corporations that have been undermining the village of Haverstraw. He decides the companies must stop operations until a certain suit brought by the village of Haverstraw against them is settled.

The village is not seeking damages from the big brick companies, but insists that the lives of its citizens shall not be placed in danger, and Justice Morschauer, in his decision stands up for the safety of the public. The suit brought by the village is for the settlement of the question as to whether or not the brick companies shall continue to dig into the land running up to the village streets and endanger the lives of the inhabitants. The suit grows out of the catastrophe which occurred two or three years ago when several houses slid down the embankments and many lives were lost. Recently the village obtained an order restraining the companies from further operations until the suit was disposed of in court. The companies objected to the order being made permanent, and their lawyer appeared before Judge Morschauer to submit arguments against it.

The decision means the brick business in Haverstraw conducted by the companies affected by the suit will come to a standstill. The residents of the village, however, are highly pleased with the decision. The companies have been working into their banks until they have gone right up to the village streets. There would be grave danger of another accident should the companies be allowed to proceed with their work.

The opinion was filed in Rockland county yesterday. It is in full as follows:

I recognize the forceful manner in which the learned counsel for the defendants opposed the continuation of the suit, but to vacate the same and allow the defendants to continue to excavate, dig and remove the material may endanger the street, and I am mindful of the imminent danger of a catastrophe which is likely to occur if the stay is not continued enjoining the defendants during the pendency of the action from digging, excavating or removing material from the premises.

There is sufficient merit in this application to continue the stay. All digging and excavating and removing of material should cease until the final determination of this action.

The defendants claim that they will be greatly damaged by the continuation of the stay, and therefore, if the defendants are so advised, the issues in this action can be brought on for trial before Mr. Justice Tompkins at Nyack, on the second Saturday in September next, or if the parties agree, I will try the issues and for that purpose will sit in Haverstraw any day in this month when I am not otherwise engaged. The plaintiff should consent to this. In the event of the plaintiff refusing to consent, the defendants may renew motion to vacate stay without prejudice.

### PECULIAR ACCIDENT AT THE PLANT OF THE FT. WAYNE PRESSED BRICK CO.

The engine room of the Fort Wayne (Ind.) Pressed Brick company was almost entirely demolished as the result of the bursting of a large fly wheel and its companion wheel on the shafting near the roof of the structure.

A. F. Butler, foreman of the plant, was upstairs conveying sand and the night engineer, Taylor White, and W. M. Stotts were outside the engine room doing odd jobs. The first to notice that something was wrong with the engine was Foreman Butler. All the shafting seemed to be running much faster than usual and as he started for the engine room the lights went out simultaneously with a terrible noise emanating from the engine room. The three men reached the engine room at the same time and on making an investigation their eyes were greeted with a scene of destruction. The large fly wheel, in bursting, had flown into a thousand pieces. One large piece of steel, weighing hundreds of pounds, had struck the left side of the brick structure with terrible force, entirely wrecking it. Another piece wrecked the wall on the opposite side and several large pieces from the companion wheel on the shafting near the roof were hurled into the air, tearing large jagged holes in the roof. Pieces of steel broke the windows and articles of machinery in the engine room and there was nothing in the room but what was damaged more or less. The engine, a large Atlas 60-horse power, was so badly wrecked that it may have to be discarded and a new one bought to take its place. Had any of the employees been in the room at the time they would doubtless have been killed.

An examination was made of the wrecked engine to ascertain the cause which led up to the accident. It was found that the governor, which regulates the steam supply through the pipes from the boilers to the engine, had broken, letting the full steam pressure into the cylinders of the engine. This caused it to "run away with itself" and the two wheels, unable to stand the strain of the terrific speed, burst.

The company employs sixteen men, who will be temporarily thrown out of employment until the damage is repaired. A. W. Butler, secretary and general manager of the concern, stated that no insurance was carried and the damaged building and engine will be a total loss. Arrangements are already being made for a new engine, which will be installed as soon as possible, in order to resume work as early as possible. The firm is pushed with orders at the present time and the enforced idleness will prove a great setback. A short time ago the entire plant was gutted by fire and has but recently been rebuilt.

### J. W. STIPES HAS JUST BOUGHT SEVENTY ACRES

George M. Bennett and Mrs. E. M. Knowlton have sold their 70-acre farm about two miles north of Urbana, to John W. Stipes of Champaign, Ill., for \$2500 an acre. The top is of fine clay for brickmaking and it is for that purpose that Mr. Stipes purchased it.



## SAND OR LIME BRICK OR BLOCK NEWS

Harlowton, Mont., is to have a new brick yard, the company will also manufacture cement blocks, as well as cement brick.

The Iowa Cement Brick Co., of Sioux City, Ia., is a pioneer in the cement brick business, and the company is doing a very promising business.

The Houston (Texas) White Brick Co., will add two new presses to their sand-lime brick plant. They are having a large call for this brick.

Cando, N. Dak., wants a sand-lime brick factory like the one recently started at Denbigh, where brick are being successfully made of sand and lime.

The Portland (Maine) Sewerpipe and Artificial Stone Co., has been awarded the contract for work at the University of Maine grounds at Orono.

The Laketon (Ind.) Sand Lime Brick Co., has closed its factory and sold the machinery on account of the railroads not making them favorable shipping rates out of the town.

Canyon City, Texas, is building a sand-lime brick plant, the machinery has been shipped from the American Sand Lime Brick Co's. factory at Anderson, Ind., and is now being installed.

J. H. Schmeck has been in Ottawa, Canada, for several months, superintending the construction of a sandstone brick plant built by the American Sandstone Brick Machinery Co., of Saginaw, Mich.

Idaho Falls, Idaho, is to have a pressed brick plant, the installation of which will cost \$35,000 and the brick will be made of sand and lime. The machinery for the plant is now on the way from the east.

The Reinforced Concrete Pipe Co., Jackson, Mich., are making miles of concrete tile at Elkhart, Ind., on the site of the big Indiana drain. The tile are 48 inches and the concrete is 5 inches in thickness.

The Sandstone Brick & Lime Co., of Seattle, Wash., are erecting a sand-lime brick plant near Clinton that will make 40,000 brick daily and the company is erecting another plant at Granite Falls. The capital stock of the company is \$100,000.

The Directors of the Michigan Sand Brick Co., Grand Rapids, Mich., met and elected H. W. Marsh of Manister, president and E. W. Stowe of Grand Rapids a director succeeded W. Harrison, W. Jones was chosen secretary and treasurer.

The Little Rock (Ark.) Granite Brick Co., has filed its annual certificate showing a capital stock of \$30,250, and the affairs are in good condition. The directors are: W. E. Green, T. T. Cotnam, Walter Cotter, Mort Roberts, W. H. Miller and J. W. Blackwood.

The Pocastello (Idaho) Pressed Brick & Mfg. Co., is pushing matters as fast as possible in the installation of its new plant and a new sand lime brick plant will be put in at Pebble in the near future. The officers of the company are C. W. Gray, president; Truxton Talbot, vice president; L. B. Gordon, secretary and L. L. Wall, superintendent.

## MISCELLANEOUS ITEMS

J. S. Powell has just finished burning a large kiln of brick at his Kirkville, Mo., plant.

The Miller Brick Works near West Terra Haute, Ind., is building another kiln which will hold 250,000 brick.

Machinery is being received and placed at the Fertile (Ia.) Clay & Fuel Co's plant, which is now being constructed.

The Hibberd Brick Co., Kearney, Nebr., is having an exceptionally good run and is shipping brick to several points in the state.

The Southern Bitulithic Brick Co., of Nashville, Tenn., has received a contract for 31,000 yards of paving work at Decatur, Ala.

John W. Stipes of Champaign, Ills., has purchased 70 acres of Clay land at \$200 per acre and will extend his brick works operations.

J. W. Pollock one of the organizers of the bricks works at Ottawa, Kansas, has sold his interest in same to J. E. Byers for a large tract of land.

Meserve & Field's who have been engaged in the brick business at Richmond, Texas, have dissolved partnership. Mr. Field retiring from the firm.

W. G. Bower has arrived in Pierre, S. D., with several cars of brick machinery from Vermillion, and will have his yard in operation at an early date.

The brick company in which J. M. Baker, Ex. Gov. Cox, and others were interested have failed to close a deal for certain real estate near Bluff City, Tenn.

The People's Brick Corporation, Baltimore, Md., has conveyed to the Crescent Brick Company the former company's plant consisting of 73 acres of land in Baltimore County.

William Sopher who was paroled from the Pontiac, Ill., Reformatory to the Supt. of the Barr Clay Co., at Streator and who broke his parole has been caught and returned to the Reformatory.

J. Robert Connelly of Terra Haute, Ind., is inspecting plants in the east. He recently purchased a fine tract of shale land near Riley and upon which he expects to locate a large brick plant.

The Richmond Clay Product Co., Reading, Pa., has been incorporated with \$5,000 capital stock. Incorporators are: Geo. F. Richmond of Hamburg; Charles B. Woods of Philadelphia and J. W. Jost of Reading.

The Western Brick & Pottery Co., Phoenix, Arizona, has been incorporated with \$50,000 capital stock. The Directors are: L. V. Munson, M. L. Kenyon, O. V. Eaton, F. A. Green and W. L. Holland of Los Angeles, Cal.

The Guthrie (Ky.) Brick & Tile Mfg. Co., has been incorporated with \$3,000 capital stock. The officers are Dr. J. M. Robinson, pres.; J. E. Leake, vice pres. and general manager and R. F. Warren, sec'y., and treas.

Representatives of the Ticonderoga Paper & Pulp Co., are prospecting near Clarendon, Vt., three miles south of Rutland with a view of building a \$30,000 clay plant. The works is in charge of George Lair of Brandon, Vt.

The Alleghany Valley Brick Co., Tarentum, Pa., has received an order for 1,000,000 brick to be shipped to Washington, D. C.

The Findlay (Ohio) Hydraulic Press Brick Co's. plant is being dismantled and the machinery shipped to St. Louis, Mo. The plant was a large one and quite a loss to Findlay.

The new brick and tile plant of Bixler, Newman & Martin east of Cynthia, Ind., is progressing nicely. The machinery is installed and the kilns are being constructed. John Fisher is the foreman.

It was reported in the July issue of the Clay Record that the Versailles (Mo.) Fire Brick Works was damaged by fire to the extent of \$10,000. This is incorrect, they sustained no loss by fire or otherwise.

The Hudson Valley Brick Co., Mechanicsville, N. Y., which was organized a few weeks ago has purchased the Wilson property south of town and is making arrangements to get the plant in working order.

The Bloomfield (Ind.) Vitrified Brick Co., will be incorporated with \$50,000 capital stock to build a large plant between Bloomfield & Jasonville on the Indianapolis Southern Ry. T. H. Schmitz of Chanute, Kansas is a large stockholder.

The plant of the Rich Hill (Mo.) Brick & Tile Co., has again changed hands. H. M. Booth of Rich Hill and James F. Hedges of Springfield are the new owners. The new firm will overhaul and modernize the plant to make brick, sewerpipe and drain tile.

Mapleton, Kansas, now has a large brick making plant in operation for the first time.

W. T. McClung, has resigned as secretary and manager of the Nelson Brick Co., at Mound Valley, Kansas.

Bernard F. Weber, president of the National Brick Company, Chicago, has bought to acres of land from Gertrude Wehrheim for \$50,000.

Several Cullom (Ills.) men went to Jackson, Minn., to investigate the establishing of a brick and tile plant there, a test of the clay is now being made.

The Houma (La.) Brick Mfg. Co., Ltd., have started at their large steam brick manufacturing plant, making 25,000 pressed brick daily. M. H. Webb is the manager.

R. C. Cromley son of Judge Cromley of Niagara Falls, N. Y., has been elected secretary and manager of the Frontier Brick Co., to succeed G. L. Gaier, who has resigned.

The New England Brick Co., of Boston, Mass., recently shipped from its Gonic, N. H., yards several carloads of brick to Omaha, Nebr., the freight on same being \$19.50 per thousand.

A. F. Smith and W. E. Wallis have formed a co-partnership for the manufacture of brick and to do contract-work and have bought out the Elberton (Ga.) Brick Co., and will operate same at its fullest capacity.

The plant of the New York and Philadelphia Brick Co., near Whippany, N. J., has been leased to the Morris County Brick Company. The new company is putting in some new machinery and changing the plant considerably.

## The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 10% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

### CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc. are left down to a point four feet below the coal-burner line of the ordinary continuous kiln the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

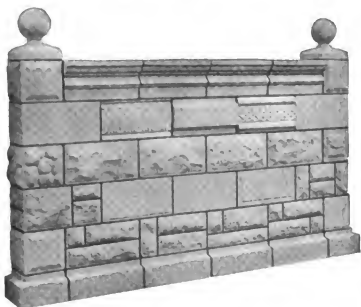
This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



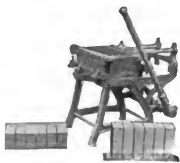
**WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.**

# What the Ideal Face Down Machine will do

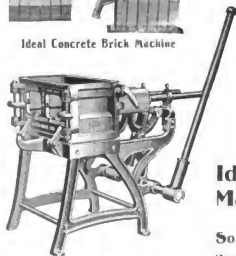
There is absolutely no limit to the artistic possibilities of the Ideal Concrete Block Machine. Of the almost endless forms and designs of blocks that a single machine can produce samples of a few are shown in cut. The "Ideal" is the only **Face Down** Concrete Block Machine in the world with practically unlimited adaptability as to size (within capacity), shape, and design of block. In addition to the only perfect Concrete Block Machine, we have the most complete line of Cement Machines in the world: Brick Machines, Mixers, Sill and Lintel Machines, Column, Spindle, Ball, and other Ornamental Molds.



Ideal Cement Sill Mould



Ideal Concrete Brick Machine



Ideal Concrete Block Machine  
In 16 and 24 inch lengths

## IDEAL Concrete Machinery

More than **three thousand** Ideal Concrete Block Machines are in profitable operation in the United States alone, and we have recently closed the largest single contract for block machines in the history of the cement industry. Within a period of thirty days we have made heavy shipments to Calcutta, Shanghai, Sydney, Khartum, Valparaiso, Mexico, Glasgow, Budapest, Bucharest, and Panama. Six carloads went to a single foreign country.

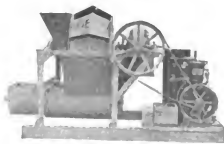
Our catalogue, magnificently illustrated, contains information of vital importance to Architects, Contractors, Builders, and those who manufacture Concrete Stone. Sent **FREE** on application.

**Ideal Concrete Machinery Co.**

Department W

**South Bend, Indiana**

Hussens Limited, Montreal,  
Canada Sole Agents for Canada



Ideal Concrete Mixer

The Central Brick Exchange, Chicago, has changed its name to the Central Brick Mfg. Co.

The plant of the Weir City (Kansas) Brick Company which has been under construction since spring is now completed.

A. J. Sewart, Aberdeen, Wash., has started up his brick yard under the direction of an expert brick maker from the east.

W. R. Whitney has sold his interests in the Salina (Kans.) Vit. Brick Co., to F. C. Hadden and has resigned as secretary and manager.

Senator Clayton, owner of the brick plant at Greeley, Colo., will build a new \$20,000 brick plant so as to keep up with the demand for brick.

A leading insider of the Illinois Brick Co., states that the company is likely to issue an extra dividend of 2 per cent. at the end of the year.

Filer & Hoffman have started a brick works on a small scale at Twisp, Wash., with a view of enlarging same if the clays prove satisfactory.

The Hancock Brick & Tile Co., Findlay, Ohio, is putting in a new steam shovel so as to more cheaply handle their clay from the pit to the machine.

The New Mexico Mfg. & Contracting Co., of Belen, N. M., has just completed the manufacture of several kilns of brick used to supply the local trade.

Citizens from Stanley, Wis., have taken options on a valuable deposit of clay found at Chippewa Falls, Wis., and an effort will be made to establish a clay works.

The Brown Tile & Brick Co., Montgomery, Ind., has been incorporated with \$10,000 capital stock. The directors are: J. F. Brown, Wm. Beck and C. W. Slinkard.

The Blumburg Brick Co., Seguin, Texas, is turning out millions of red brick for the new Southern Pacific Freight depot at San Antonio. The plant is running day and night.

The Berlin Heights (Ohio) Brick & Tile Co., has been incorporated with \$10,000 capital stock by L. B. Ayers, C. A. Peake, T. S. Waldron, Samuel Ayers and L. S. Van Serotem.

The Blair Brick Co., capital stock \$300,000 has been incorporated. Incorporators are: J. Bair, of West Manchester, Pa.; C. F. Clark of Philadelphia, and J. G. Gray of Wilmington, Del.

The Corona (Cal.) Pressed Brick & Terra Cotta Co., have organized with C. E. Kennedy of Riverside as president and treasurer; G. F. Dean, vice president; E. J. Genereau, secretary and manager.

The Ambridge (Pa.) Brick Co., has been incorporated with \$5,000 capital stock. Directors are: Henry Cooper, Bellevue, A. A. Hersherberger & John F. Miller of Allegheny; Wm. F. Wilson, of Pittsburg and Thos. P. Speer of Economy.

H. B. Wiley and W. S. Cochran of Chanute, Kansas, and E. B. Jewett of Wichita were in Caney in conference with Col. Porter and others in reference to building of the Monarch brick plant. It is the intention to merge the two plants when the Monarch is built, they having one in Chanute.

The Humboldt (Kansas) Brick Co., has purchased a 65 ton steam shovel for their brick works.

O. B. Thomas has just arrived in Salina, Kansas, and will manage the plant of the Salina Vitrified Brick Co.

The Eastern Illinois Brick Co., at Beecher, Ills., is erecting another large kiln shed, also laying additional side track.

According to the Greenfield, Ills., Argus a brick plant is on prospect for that city in connection with the new electric light plant.

W. S. McKissick of Adel, Ia., is looking around for a location for a brick and tile works. At present indications Mason City looks good to him.

The Richfield (Utah) Brick & Tile Co., started up its new pressed brick plant using electric motor power which operates the plant very satisfactory.

Fred Koch, president of the Twin City Brick Co., St. Paul, Minn., and Prof. Sardeson a geologist recently visited New Ulm, for an examination of the clays.

The Peoria (Ills.) Workhouse force fired their first kiln of brick last week and the construction of the second kiln has begun. They will make only 1,300,000 brick this year.

The plant of the Diamond Fire Brick Co., at Canon City, Colo., is now being overhauled and \$25,000 spent in improvements. Several new buildings and kilns will be erected.

The Greentown (Ind.) Brick & Tile Co., has been incorporated with \$12,000 capital stock by Steven Colescott, John Fell and William Willcuts. They will take over the Colescott Tile Works.

## DIRECT HEAT

# DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**

62-64 William St.

NEW YORK CITY

## CLAY RECORD.

## BRICK PLANT FOR SALE

Brick Plant on three railroads, within two blocks of paved arteries, in prosperous town. Address: EDWIN A. WILSON, Marine Bank Bldg., Springfield, Illinois

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, cheap. Have several brewers' mills for sale, and others. Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write Brick and Tile Machinery Secor, Ill.

## A MANUFACTURING PROPOSITION

We install and equip complete plants for manufacture of Egyptian Plaster Plates, the popular new building material now in great demand. It's inexpensive and modern. Nailed on like boards. Only a small investment, and we have exclusive territory protected by patents. Egyptian Sheet Plaster Co. Jackson, Mich.

## BRICK PLANT WANTED

Wanted to buy an interest in a pressed or paving brick plant located in Central States and having down draft kilns. Will take a position as manager with privilege to purchase an interest when found satisfactory. Address: "Manager" Care of Clay Record, Chicago, Illinois

## FOR SALE

One power Presses, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars. American Enamelled Brick & Tile Co. Madison Ave. New York

## FOREMAN WANTED

By a tile and brick plant in Central Illinois an outside yard foreman to take charge of setting and emptying kilns, car loading, etc. Address stating experience and wages desired. A. B. CARE OF CLAY RECORD Chicago, Illinois

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 28 combined brick machines with repair parts and having done to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars. GREAT EASTERN CLAY CO. 30 Cortland St., New York.

## 50 PERCENT SAVED

Fifty percent saved on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash. H. WALSH 131 Lander St., Newburgh, N. Y.

## FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address LOCK BOX 26 CARE OF CLAY RECORD Chicago, Illinois

## BRICK YARD FOR SALE

Old established yard in good town of 8,000 people with good country surrounding. 40 acres, good kilns and sheds. Good reason for selling. Call on a address CHARLES MCNEAL Maryville, Mo.

## WANTED

A competent and experienced manager and sales' man for mud line brick factory. Address: BUSINESS MAN CARE OF CLAY RECORD Chicago, Illinois

## FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for seven feet 18 to 20 to 1000 per thousand. Good clay, good kilns and sheds. Good Machinery, good water, plenty of good free for hauling less than 1 mile. Plenty of labor and \$60.00 brick now contracted for. Good reason for selling. No competition. Address GEORGE BARNEY, Louisville, La.

## WANTED

Wanted Stoneware Potter—both wheel and Kiln men. Write to SPOKANE POTTERY CO. Clayton, Wash.

## WANTED

A traveling salesman, a man who has a general knowledge of the brick business. Permanent employment. Address: B. C., care Clay Record Chicago, Ill.

## SUPERINTENDENT WANTED

A superintendent for a still mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT. Care Clay Record, Chicago, Ill.

## MEN WANTED

Three (3), or four (4) good brick handlers, also two (2) brick kiln fireman, good pay and steady work for the right men. Address: Capt. Missouri Slips Brick and Tile Co. Dickinson, N. D.

## FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO., Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 18, 19, 20 and 25 pound. For prices, address: THE ATLAS CAR & MFG. CO., Cleveland, Ohio.

## KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south. L. T. LEHR, Zenith, Ga.

## FOR SALE

Clay Disintegrator, new \$50.00; Tempering Wheel used only two seasons \$20.00. C. EUGENE KEMP 806 Locust St., Williamsport, Pa.

## MACHINERY FOR SALE

Best mud outfit manufactured by the American Clay Working Machinery Co., consisting of Upright Rock Brick Machines, direct attached Pug Mill, Mold Sander, Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Tallets. All in fine condition; very reasonable price. Apply to BALTIMORE VITRIFIED BRICK CO. Baltimore, Md.

## PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write. S. E. CLARK, Redfield, So. Dak.

## WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the make of the pan, together with best price. CLEMENT JUNGERS Streator, Ill.

## PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of work, and good market for all the brick. Address DENIS, care Clay Record Chicago, Ill.

## FOR SALE

A fine Kaolin bed of 120 acres, with strata of excellent fire clay from 12 to 15 feet deep, light over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address J. B. SALKLEY, Attorney, Aiken, S. C.



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### EFFLORESCENCE OF BRICK

(Continued from last issue.)

#### Summary.

To sun up, kiln and dryer white can be avoided by using only fresh clay, by weathering and washing it, by the use of barium, by quick drying, by alternately reducing and oxidizing when finishing the burn; or by coating the face of the brick with coal tar or wheat flour.

#### Wall White.

The composition of wall white is somewhat more varied than kiln white and several additional factors enter into its production. As examples of the different modes of occurrence and composition of the efflorescence I will mention a few samples that were collected from some of the buildings of the University of Illinois.

From the above it will be readily seen that the sulphates of magnesium and calcium are the most constant constituents of the efflorescence, although sodium and potassium may be present. The carbonates are also a fairly constant part of the whitewash and occasionally chlorides may be present. In No. 10 the principal salt of efflorescence was found to be sodium bicarbonate. This particular efflorescence was peculiar in that it deliquesced and became syrupy after it was corked up in the specimen tube. Sodium and potassium are probably more frequently present than these results would indicate, as with the means at hand it was not possible to detect small amounts of these substances with certainty. In fact, analyses made here a few years ago by Steinmeyer, thesis 1902, Chemical Department, showed them to be present in all the specimens of efflorescence examined at that time.

All of the efflorescences are not white, but are discolored more or less by the soot that finds lodgment in them. Some are green, as was No. 11, but the amount of the efflorescence that could be collected was too small to determine the coloring matter. Seger states that some green efflorescences he examined were colored with salts of Vanadium. Other writers have ascribed the color to iron and chromium. Unfortunately not enough of the green was

found for examination and nothing further can be added at this time. It is certain if vanadium is the cause it does not exist in the clay in a soluble form before being burned, as both Seger and Gerlach were unable to find it after lixiviating large amounts of clay. The green efflorescence seems to occur only on the lighter brick and has not been observed on the red brick so far. Much of the greenish scum appearing on the walls especially in damp places is due to a minute plant and is not an efflorescence at all.

*Means of determination.* It was thought that it might be possible to determine the main constituents of any efflorescence by observing the forms of the crystallized salts as they appeared on the wall and with this end in view a number of briquettes were made of a surface clay that had been thoroughly washed to remove any soluble salts that might be present. After being burned, these were placed in 0.5% solutions of the sulphates of calcium, magnesium, iron, sodium, and potassium, the carbonates of sodium and potassium, and sodium bicarbonate. The briquettes were left with their tops exposed to the air and after the efflorescence had appeared they were taken out of the solution and dried. As before, the sulphates took the lead, especially the sodium, iron and magnesium sulphates, although the sodium carbonates were not far behind. One surprising result was that the potassium and sodium salts did not effloresce. Consequently, the small amount of the salt that came through remained in two or three small white knobs. The main result was, however, negative, for as soon as the salts crystallized on the surface they effloresced, and all crystalline form was lost.

Again it was thought that it might be possible to dissolve a little of the efflorescence in distilled water and allow it to crystallize by the evaporation of the water. Then, since each salt should crystallize by itself, the composition of the efflorescence could be determined by examination of the crystals. With the pure solutions of the salts in this plan worked very well, but on mixing them, as would be the case in the efflorescences, it was found that the salts as a rule no longer retained their characteristic forms and the plan had to be abandoned. The reason for this seemed to

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## CLAY RECORD.

be the fact that the several crystals formed were so superimposed as to hide their shape.

*Occurrence of wall white.* Referring again to the efflorescences described, with reference to the places where they are most apt to occur, it will be seen that they only appear as a rule where there is excessive moisture such as near the cornices, near the ground where the water in the soil passes up through the foundation and evaporates and where the wall carries or has water pipes or radiators near it. In other words, the efflorescence is not troublesome except where there is plenty of water to bring it out. The rain undoubtedly has something to do with the appearance of the efflorescence on the walls, for it is a well-known fact that a dry brick will absorb water very quickly. So with every rain

carry the salts to the surface either through direct leakage or by condensing the moisture of the air upon them and thus keeping the wall damp. The foundation is generally in intimate contact with the soil and the water in the soil, traveling through the capillary pores of the soil and the wall, evaporates on the wall just above the ground. This again causes the salts to be gathered on the surface to the brick and again the disfiguring whitewash appears.

In every case of efflorescence I have been able to examine the blotches were caused by an excess of water produced in one of these three ways. Often on buildings not supposed to whitewash the faint even coat produced by the leaching action of the rain could be seen, showing that if care were taken to prevent the other causes, the whitewash

Building	Brick	Mortar	Position, form, color, etc.	Composition
1. Engineering	Yellow pressed	Lime	Efflorescence noticeable on all of the brick, not on the mortar. Especially thick on a column that had water pipes behind it, also bad patches where radiators were near wall. Also on sand stone in first story near entrance which projects from the building.	MgSO <sub>4</sub> with trace of Ca and Cl.
2. Agricultural	Yellow pressed	Lime	On brick wainscoting in hall. Sink just back of the wall. Efflorescence white in a patch just below the level of the sink.	MgSO <sub>4</sub> and trace of calcium.
3. Agricultural	Bedford lime stone	Lime	White efflorescence on first story on the north wall of creamery.	CaSO <sub>4</sub> and NaCO <sub>3</sub> .
4. Wood shop	Red pressed	Lime	White efflorescence especially bad on the north wall near cornice.	MgSO <sub>4</sub> and NaCl.
5. Library	Brown sand stone	Lime colored red	White efflorescence on front of the building near cornice. Generally on or near the mortar.	Not determined. Probably a sulphate.
6. Pier back of Engineering Building	Red, common	Neat cement	White efflorescence on both the brick and mortar, near the top.	CaSO <sub>4</sub> , trace of CO <sub>2</sub> .
7. Pier back of Engineering Building	Red, common	Lime	White efflorescence on brick and mortar near the top.	MgSO <sub>4</sub> , trace CO <sub>2</sub> and Cl.

storm there is a certain amount of water that penetrates the brick and brings out the soluble salts and deposits them on the surface when it evaporates again. As the salts, calcium sulphate excepted, are very soluble, the rain washes off what was deposited from the last rain and so the efflorescence is not large in amount at any one time, and besides, as it is evenly distributed over the wall, it is not unsightly.

At the cornices where the water of the roof is concentrated, especially if the gutters leak, the water is able to enter the wall and to travel a distance through it before it evaporates from the surface. During its passage it dissolves the soluble salts of the brick and mortar, and carries them to the outside of the wall. As the part of the wall where the salts are deposited is generally rather limited in extent the result is an ugly blotch that disfigures the building. In the same way water pipes or radiators supply the necessary water to

from this cause would not be troublesome.

Pressed brick are especially subject to this disfigurement, since their smooth surface shows every spot. It has often been observed that sand-molded brick did not show efflorescence, while pressed brick made of the same clay would. This can be explained only by the difference in the structure of the faces of the two bricks. The rough surface conceals the little pimples raised by the salts and besides retains more dust and dirt with which to color the efflorescence, while on the smooth surface of the pressed brick the salts stick out obtrusively and retain their natural whiteness, since the dust and soot that colors them must come from the air.

Again the law of adsorption explained in regard to the drying of the brick holds good here. The pressed brick have a dense surface and fine pores, necessitating slow evaporation, while the sand-molded brick are more porous

and water can evaporate from them more rapidly. In consequence the greater amount of efflorescence is brought to the surface of the pressed brick.

The sources of the wall efflorescence lie in the brick, the mortar, or in materials brought in contact with them as water, soot, or refuse.

As has been stated in explaining kiln white, practically the only soluble salts left in the brick are the sulphates of calcium and magnesium. These may have been originally in the clay or may have been formed in the brick during the process of manufacture through the reaction of the pyrite in the clay and coal with the carbonates in the clay. The manner in which these salts affect efflorescences differs.

Of the two, magnesium is much the more soluble and, as we have seen, effloresces much more freely. On the other hand the calcium sulphate once formed on the surface of the wall is much more difficult to remove. Again, while the magnesium generally effloresces unaltered, the calcium is more apt to react with the carbonates of magnesium, sodium, and potassium brought into the brick by the water from the mortar, forming calcium carbonate which is quite insoluble and remains in the interior of the brick, while the sulphates of magnesium and sodium formed by this reaction, effloresce. This was well illustrated in the first case mentioned, where it was possible to pick bits of calcium sulphate from the face of the brick with a knife, while the efflorescence consisted almost entirely of magnesium sulphate.

The lime in the mortar furnishes the sulphates, carbonates, and chlorides of calcium, magnesium, sodium and potassium. The sulphates are formed during the burning of the lime by the reaction of sulphurous gases formed by the burning coal with calcium, etc., of the limestone. This reaction is the same as was worked out by Guenther and Gerlach in the brick as a cause of kiln white, but as far as I know has not been mentioned as a possible cause of the wall whites. Such samples of lime and mortar as were at hand were found to contain considerable soluble sulphates and it seems possible that this is one of the most fruitful causes of the wall white. Surely it offers an explanation for many cases of efflorescence that were due to the mortar, but which was difficult to prove because the sulphate came from a medium which was principally composed of carbonates.

The sand and water used in the mixing of the mortar may, under exceptional circumstances, be responsible for efflorescence, but as the sand used has generally been washed over and over again by the streams and circulating earth water, it is not reasonable to suppose that any amount of soluble material remains. Only in some situations where water circulating through the bed of sand is charged with material in solution can there be any deposited in it. Again the amount of salts in the water used in the mortar is so small, as a rule, it is hardly possible to believe it could cause any amount of efflorescence.

Other things added, such as coloring matter, salt, are very often responsible for the trouble. The oxide of iron generally used to color the mortar red is made by heating iron sulphate and generally all of the sulphate is not decomposed. This reacts with the lime to form soluble sul-

phates and these in turn effloresce. This particular case was well illustrated by example No. 5, where the stone is a very porous silicious sandstone laid in red mortar, the efflorescence indicating its origin by appearing on or near the mortar.

Again, sodium chloride, or common salt, is added to the mortar in winter time to keep it from freezing before it sets. This salt comes out on the surface of the brick as soon as it has the water to carry it and appears as efflorescence. This was illustrated by example No. 4. An analysis of this efflorescence showed it to consist of more than 80 per cent. of salt.

Besides by the brick and the mortar, efflorescence is often caused by substances in contact with the brick. The efflorescence of brick stacked in stock piles is often caused by the cinders upon which they are stacked. The cinders contain sulphates from the coal from which they were formed and the water of the ground seeps up through them and through the brick evaporating from the faces of the brick and leaving the salts behind. Manure thrown against the wall will cause efflorescence through the nitrates and other soluble salts it contains. This is abundantly illustrated on stable walls and was first noticed there, the nitre found giving its name to all efflorescences. The soil contains nitrates especially where there is abundant vegetation and this occasionally enters the wall to appear higher up.

Benfy<sup>1</sup> explains the appearance of an efflorescence on the walls of buildings in Chicago by the leaching out of the sulphates of the soot, adhering to the walls by the rain which then entered the brick and evaporating, left the efflorescence behind, the soot having been washed off in the meantime.

If the water seeping through the wall has much material in solution, it is possible it would cause efflorescence on evaporation.

As will be seen from the above, the causes of wall efflorescence are numerous, and one, at least, is omnipresent, the sulphate in the lime. If this is the case, why is it that every brick building does not show efflorescence? The answer is clear. No building can have efflorescence unless there is a supply of water to bring it out. The rains can do no more than bring out a faint even coat that is washed off by the succeeding rain. This is not a disagreeable thing and the efflorescence only becomes a nuisance when it is collected in blotches. What, then, is the remedy?

Make the walls as impervious as possible. Use well burned brick, lay a drain around the foundation and coat the foundation with a good waterproof paint before the ditch is filled in; likewise water-proof the walls and flues that convey water, or steam pipes. Take care that the cornice and roof is watertight. Attention to these simple things during the erection of a building will mean a clean wall and a much improved appearance.

After the building is finished, if the efflorescence comes out, there are only a few things that can be done. The walls may be painted which conceals the brick as well as the efflorescence and is liable to peel off in the damp spots. The walls may be treated with paraffine or linseed oil, which will darken the brick but not conceal them entirely. Then, as before, all source of water supply to this wall must be stopped if possible. In that way alone is there any hope of success for the present.

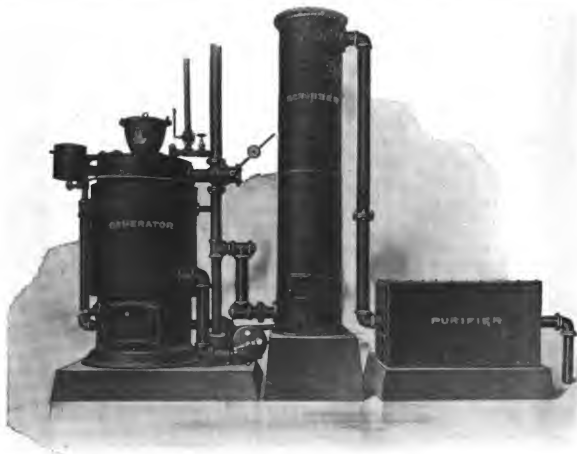


### GAS ENGINE AND GAS PRODUCER

The New Era Gas Engine company, of Dayton, Ohio, has just installed in the plant of the P. Hagerty Shoe company one of the most economical power plants of this age, consisting of a 35-horse-power New Era gas engine and a 50-horse-power New Era automatic suction gas producer, which plant furnishes the factory with power to operate their machines.

The fuel used to operate their former New Era gas engine, which was a 25-horse-power, was manufactured gas, costing the P. Hagerty Shoe company four dollars (\$4) per day. Since installing the New Era gas engine and producer their fuel bills have been cut down to one dollar (\$1) per

four hours. The generator is lined with fire-brick, which can be easily replaced. The grate can be cleaned and the generator thoroughly clinkered and the ashes removed in a few moments' time. The evaporator is located on top of the generator and is filled with water, over which a current of hot air is passed, and as the water in the evaporator is at a very high temperature from the heat in the generator (the fire being kept burning continuously), the air in passing absorbs moisture and passes down through a pipe to underneath the grate in the generator and through the fire in the generator. In doing this the saturated air or steam is converted into gas. The gas then passes through a pipe from the generator to the scrubber. The constant suction of air



NEW ERA SUCTION GAS PRODUCER, MADE BY NEW ERA GAS ENGINE CO

day. This wonderful power plant is worthy of a brief description, and those that are interested in power plants will be interested in knowing that the gas engines and gas producers are rapidly taking the place of steam engines and boilers on account of the great economy in operating a gas engine and producer.

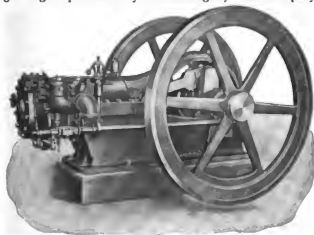
The New Era automatic suction gas producer consists of a generator, scrubber and purifier, all built of steel boiler plate. The fuel used to produce gas in the generator to operate the gas engine is anthracite pea coal. The generator is very simple, and will hold enough coal for one day's run, and requires charging with coal but once in twenty-

through the producer is kept up during the time the gas engine is in operation, caused by the outward or suction stroke of the piston in the gas engine.

The scrubber, which is twelve feet high and thirty-two inches in diameter, is filled with coke. The gas enters the scrubber at the bottom by pipe from the generator and passes upward and meets with a spray of water from the top of the scrubber, which process cleans and cools off the gas, then passing from the scrubber to the purifier. The purifier, or gas holder, dries the gas and removes the sulphur and other impurities, and forms a reservoir for the engine to draw from.

When the gas engine is in operation the suction of the piston draws the gas from the producer through a pipe into the cylinder of the gas engine, and the gas is then compressed and fired by means of an electric spark, which creates an explosion, thus producing the power in the gas engine.

The New Era gas engine is a magnificent piece of machinery, and the 35-horse-power New Era now in operation in the P. Hagerty Shoe company, in connection with the New Era automatic suction gas producer, is the third New Era gas engine purchased by the P. Hagerty Shoe company.



NEW ERA GAS ENGINE

This factory first started with a 14-horse-power New Era, and as their factory increased in size, their requirements for power increased.—Washington C. H., Ohio.

#### PROPOSED DEVELOPMENT OF THE STONE, CLAY AND COAL DEPOSITS AT LEHMANN

William A. Phillips, capitalist, T. R. Lehmann, a business associate of Mr. Phillips, and O. J. Olinger, general manager for the clay manufacturing concern, all of Iowa City, Iowa, were in Canton, Ill., in connection with deal which, if it goes through, will open up the quarry, clay beds and coal fields of the town of Lehmann. Lehmann is located 20 miles west of Canton on the T., P. & W. road.

The properties in question include a tract of 700 acres. They were owned until recently by Mrs. Kate P. Lehmann, of Cincinnati, widow of the late R. F. Lehmann, who started in to develop these deposits many years ago. Mrs. Lehmann sold her interest in the tract last July to Joseph A. and Oregon Sr. Dean, of Sioux City, Iowa, the transfer being engineered by Attorney G. B. Grant, of this city.

The Deans bought the place for its agricultural and stock-raising advantages. The soil deposits never entered into their calculations when they acquired the land. It was their idea to lease the latter out on royalties, whenever they decided that the mineral beds should be developed.

Messrs. Phillips, Lehmann and Olinger are interested in the clay industry. Learning that the Lehmann tract contained a clay bed 14 feet deep and of practically inexhaustible supply, they opened negotiations to lease the property. Their visit to Lehmann now is to ascertain if the field is as rich in clay deposits as they have been led to believe.

#### TEXAS BRICK MANUFACTURERS HOLD MEETING

Austin, Tex., Sept. 12.—The mid-summer meeting of the Brick Manufacturers' association of Texas was held in this city yesterday with an attendance of about twenty-five out of a membership of forty. An interesting program had been prepared and was discussed at length. Corsicana was selected as the next place of meeting to be held in February.

President C. R. Sherrill of Corsicana delivered an interesting address dealing with the work and educational features of the association and various matters pertaining to the manufacture of brick. Papers were read and addresses made on the following subjects which were also cussion by the members.

"Best Clamp Construction for Common Brick," Leon Keeble of Elgin.

"Cement Block and Reinforced Concrete Competition," discussed by J. M. Harry, Dallas; Thomas Miller, Rusk, and C. R. Sherrill of Corsicana.

"The Advantage of Association Work," William Weatherford of Ferris.

"A Modern Brick Plant, Its Advantages and Construction," J. J. Glehill, St. Louis.

"Watersmoking and Drying Brick by Waste Heat from Updraft Kilns," A. R. Harwood, Gonzales.

"System of Keeping Cost of Production," general discussion by the members.

"Texas as a Field for Clayworking Industry," W. G. Sneed, Austin.

"Best Method of Handling Material from Pits to Grinding Machine," Davis Duff, Ferris; Walter Bennett, Millsaps, and T. G. Cole, Ferris.

Two sessions were held, one at 10 o'clock in the morning and the other at 2:30 o'clock in the afternoon. In the evening the visiting members were entertained by the local members of the association with a smoker.

The officers of the association are as follows: C. R. Sherrill, Corsicana, president; T. G. Cole, Ferris, vice-president; Cal Swartz, Corsicana, second vice-president; J. M. Harry, Dallas, secretary and treasurer. These gentlemen with the exception of Mr. Swartz, were all present and also the following: Leon Keeble, Rusk; Thos. Miller, Rusk; William Weatherford, Ferris; J. J. Glehill, St. Louis; A. R. Harwood, Gonzales; W. G. Sneed, Austin; A. J. Zilker, Austin; Davis Duff, Ferris; S. M. Johnson and Geo. R. Page, Laredo; D. R. Boone, Oglesby; M. T. Carlton and M. T. and E. R. Smith, Elgin; C. W. Williams, San Antonio; E. J. Byrne, Austin, and M. W. Staniforth, Gainesville.

This was the third meeting of the association, which was organized about a year and a half ago. Much interest is being shown in the work and six new members were received yesterday. The delegates to the meeting of the National Association of Brick Manufacturers, to be held probably at Columbus, Ohio, in February next, will be selected at the meeting of the Texas association to be held in Corsicana.

#### TURNING OUT 45,000 BRICK DAILY

Simon Kline, brick manufacturer, West Reading, Pa., is turning out 45,000 brick a day. These are all made by machine and disposed of to Reading builders. He has been in the business 55 years, employs 48 hands and although 78 years old, can be seen almost daily at his brick plant.

A paper read before the Twenty-first Annual Convention of the National Brick Manufacturers' Association of the United States of America, St. Louis, February, 4-9, 1907.

### MECHANICAL VERSUS HAND WORK

By W. H. ALSLIP, WINNIPEG, MANITOBA

In the city of Pittsburg, sixty years ago, my father, then a boy, made a brick by hand; the only mechanical appliances, if they may be so called, were a spade, wheelbarrow, table, bow and two two-brick molds. A brief description of a gang making hand-made brick with these mechanical helps may be of interest to some of our younger brothers who have installed an up-to-date plant equipped with all the latest appliances and have never known the hardships of a hand yard. The owner of a hand yard, after determining the amount of brick he wished to make, would start in the fall by weathering his clay. This process many of our manufacturers follow to-day. To weather the clay the bank was undermined and caved down, then cast over with a spade and left to freeze and thaw until spring. This reduces all the lumps and puts the clay in condition to be tempered with the least amount of labor, which was very necessary, as you will see later on.

In the spring the gang, consisting of four men and a boy, were hired by the month without board. The moulder received thirty-five dollars, the three men twenty-six dollars each and the boy fifteen dollars. This made a daily wage of four dollars and eighty-five cents per day for the gang.

Thirty-two hundred brick was a day's work for this gang, who took the clay from the weathered pile and made it into brick, which they stored in the shed built for that purpose. The clay was taken from the weathered pile with a spade and cast into a pile called the soak pile, where water was added and then it was left to soak over night.

Next morning the clay was slashed out or tempered with a spade until in proper shape for the moulder. It was then loaded on an old-fashioned wheelbarrow, where the man carried most of the load by the aid of a strap over his shoulders, to the moulder's table located on the drying floor, where he would again, by the use of his spade, deposit the clay on the table which had been sanded to keep it from sticking.

The moulder with his hands cut a clod from the clay and, after giving it a roll on the table, drove it into the mould, which had been wetted and sanded and placed before him by the off-bearer. The surplus clay, called caps, was cut off the top of the mould with a bow and wire and the caps thrown back onto the table. The off-bearer took the mould and dumped the brick on the floor or ground, which had been leveled off to receive them. The bricks were next edged and hacked and when dry enough were wheeled to the storage shed where they were kept until one hundred thousand or more were made. Then the making was stopped and the kiln filled and burned. This was hand-work brick making as my father knew it when a boy. On a hand yard to-day a striker will mould 8,000 brick in a day. His

clay is ground by horse power, otherwise he has little advantage over his father of sixty years ago.

Hand-work in the brick yard, like the stage coach, will soon be a thing of the past. It has filled its mission and, while some of the work in a modern yard is done by hand, the ratio is about the same as the amount of mechanical appliances was in the yard I have just described. Mechanical-made ware, where the workmen have only to look after the machines through most of the stages of its manufacture, is a blessing to mankind. Much of the dudgeony of the hand yard is eliminated. The workman after his day's work, returns to his family with some spirit left in him, which makes life what it should be, well worth living.

The age when men object to machinery lessening the labor required to produce the necessities and luxuries, which even the man who labors expects and should enjoy, is passing away.

To-day a man who discovers or invents anything which is a benefit to mankind, is looked upon as a public benefactor; our laws are framed and passed to encourage and protect him in his work. The result of this policy is that the clayworker of to-day has at his command machinery that relieves him of much of the heavy manual labor which was necessary in our father's time.

Looking back through the ages we see many of our great benefactors who, after years of toil and study, invented great labor-saving machines, which, when introduced, brought only persecution and condemnation.

Each year makes improvements in equipment, from the clay bank or mine to the delivered ware. With all this advance in improved machinery we still face the problem of how and where we can procure the labor necessary to produce the quality, quantity and kinds of goods required to keep up with the urgent demands that our country, in this era of prosperity, places upon us.

The manufacturer is looking to the machinery man and inventors for improved methods, which will enable him to produce not only more and better ware, but make it at less cost.

Many of the manufacturers have closed their books for the year of 1906 and find their profits much less than for 1905. They have analyzed their cost accounts and find that nearly everything that enters into the cost of the manufactured ware has advanced in price, while the sales price has remained about the same. The manager is convinced that he must do something to protect his profits and first turns to the most natural remedy, which is to raise the selling price. After careful investigation he decides that this will not be wise, as structural steel, cast concrete, sand-lime and sand-cement brick are in the field and are ready to fill the place of clay brick if given the chance. The only other remedy is to produce the brick at a less cost. This is what every progressive brickmaker of to-day has been and is trying to do. He is looking for machinery that will make more and better brick at a less cost. He is installing the best machinery, adopting the latest methods and equipping his plant with the best his means will afford.

<sup>1</sup> The word of "New Negro" is attributed among its first to Ralph W. Burdette, who used it in 1902 in the title of his book, *The New Negro*. It was later used by W. E. B. DuBois in 1903 in the title of his book, *The Philadelphia Negro*. The term was also used by other writers of the time, including Langston Hughes, who used it in the title of his 1925 novel, *The New Negro*.

JEFFERSON MIDDLETON,  
 STEVENSON

# **SURFACE WATER SUPPLY OF THE UNITED STATES**

The water supply of the United States is of more importance to the life and pursuits of the people than any other natural resource. In the arid states the limit of agricultural development is determined by the amount of water available for irrigation, while in all parts of the country the increase in the population of cities and towns makes necessary additional water supplies for domestic and industrial uses, in procuring which both the quantity and quality of the water that may be obtained must be considered. The location of manufacturing plants may depend largely on the water-power facilities and on the character of the water. The notable advances made in the electric transmission of power have led to the utilization of water powers for the operation of manufacturing establishments, railroads and municipal lighting plants, many of which are at some distance from the places at which the power is developed.

The intelligent establishment and maintenance of enterprises of industries that depend on the use of water demands a thorough knowledge of the flow of the streams and an understanding of the conditions affecting that flow. This knowledge should be based on data showing both the total flow and the distribution of the flow throughout the year, in order that normal fluctuations may be provided for. As the flow of a stream is variable from year to year, estimates of future flow can be made only from a study of observations covering several years.

The rapid increase in the development of the water resources of the United States has caused a great demand by engineers for information in regard to the flow of streams as it is now generally realized that the failure of many large power, irrigation and other projects has been due to the fact that plans were made without sufficient trustworthy information in respect to the water supply.

Owing to the broad scope of these investigations and the length of time they should cover in order that the records may be of greatest value, it is in general impossible for private individuals to collect the necessary data, and as many of the streams traverse more than one state, this work does not properly fall within the province of the state authorities. The United States Geological Survey has therefore, by means of specific appropriations by Congress, for several years made systematic studies of stream flow, with a view to determining ultimately all the important features pertaining to the flow of the principal streams of the country. In carrying on this work stations are established on the streams and maintained for a period long enough to show their regimen or general behavior. When a record that is sufficient for this purpose has been obtained for any stream, the work on that stream is discontinued. The order in which the streams are measured is determined by the degree of their importance.

In 1906 the regimen of flow was studied at about 700 stations distributed along various rivers, and data in regard to precipitation, evaporation, water power, and river profiles were collected in many sections of the country. These data have been assembled by drainage areas and will be published in a series of fourteen Water-Supply and Irriga-

tion Papers, each of which will relate to the surface water resources of a group of adjacent areas. In these papers are embodied not only the data collected at the stations, but also the results of computations based on these data and other information that has a direct bearing on the subject, such as descriptions of the basins and the streams draining them, utility of the water resources, etc. The papers are numbered 201 to 214 inclusive, and the six listed below are now ready for distribution:

201. Surface water supply of New England, 1906. (Atlantic Coast of New England Drainage.) H. K. Barrows, district hydrographer. Includes data relating to the St. John, St. Croix, Machias, Penobscot, Kenebec, Androscoggin, Presumpscot, Saco, Merrimack, Blackstone, Connecticut and Housatonic drainage basins.
202. Surface water supply of Hudson, Passaic, Raritan, and Delaware River drainages, 1906. H. K. Barrows and N. C. Grover, district hydrographers.
203. Surface water supply of Middle Atlantic States, 1906. (Susquehanna, Gunpowder, Patapsco, Potomac, James, Roanoke, and Yadkin River drainages.) N. C. Grover, district hydrographer.
204. Surface water supply of Southern Atlantic and Eastern Gulf States, 1906. (Santee, Savannah, Ogeechee, and Altamaha Rivers and Eastern Gulf of Mexico drainages.) M. R. Hall, district hydrographer.
205. Surface water supply of Ohio and lower eastern Mississippi River drainages, 1906. M. R. Hall, N. C. Grover and A. H. Horton, district hydrographers.
206. Surface water supply of Great Lakes and St. Lawrence River drainages, 1906. H. K. Barrows and A. H. Horton, district hydrographers.

Other papers of this series will be published within a few months. Copies of these papers will be furnished without charge to those applying to the Director of the Geological Survey at Washington, D. C.

## **ELI ZIEGLER, INVENTOR OF CONTRIVANCE TO BUMP BRICK FROM MOULDS**

Eli Ziegler, the ex-county commissioner, now a resident of Stewartstown, Pa., where he conducts a brick plant, has apparently landed on "Easy Street" by keeping his eyes open. He has invented a contrivance to "bump" green brick loose from the moulds. Yesterday he installed one at the plant of John Kissinger & Bro. of York, Pa., and it is said that the contrivance will revolutionize the brick making business. Mr. Kissinger said that every brickmaker in the United States would have to have one, and would have one without a doubt. Mr. Ziegler has applied for a patent.

Heretofore brick have been bumped loose from the moulds by hands. It required men of brains and plenty of muscle, and then they would not hold on to the job for any length of time. Mr. Ziegler had so much trouble keeping a man for the job that he set to work and after many failures succeeded.

By Mr. Ziegler's patent one boy can do what two men formerly done and he can do it better.

## WAGES OF POTTERS ADJUSTED FOR TWO YEARS MORE

Representatives of the National Brotherhood of Operative Potters of the United States, together with a special committee from the United States Pottery Manufacturers' association, met Aug. 24, in the Hotel Astor at New York, and after a long session reaffirmed the wage agreement which expires October 1, 1907, for two more years. Many of the twenty-eight new demands made by the union on the manufacturers were compromised or arranged in a way satisfactory to all.

The manufacturers were almost a unit in declaring that these demands are so radical that it was impossible to meet them, and the general feeling in the trade was of anxiety lest there should be a repetition of the disastrous shut-down of 1894, the effects of which are still felt in Eastern pottery centers. The direct effect of the strike of 1894 was to drive much of the general ware trade to the West, where the bulk of it has remained.

The potters are working under a wage agreement made two years ago which expires on Oct. 1. The purpose of the New York conference was to make a new agreement which the operatives are unwilling to do upon the old terms. They notified the employers of their demands, the principal claim being for wages in which the increase asked ranges from 10 to 50 per cent. The larger increases are only for a few special articles, the average being between 15 and 20 per cent.

There was also a demand by the seegar-makers that the employers stand the cost of preparing the clay, which is equivalent to about 10 per cent increase in wages. Another was that the so-called "C. C." list be eliminated and white granite prices paid for everything. This would also mean a substantial increase in the wages. The packers presented their grievances, too, demanding that heat be installed in the packing sheds, and that all returned packages be placed under cover instead of being exposed to the elements, as is generally the case.

The manufacturers say that under present trade conditions granting of the demands was out of the question. They say it would add to the operating cost of a factory about \$1,000 a year for each kiln, an expenditure not warranted by the prices received for the product. The American public, they say, seems disposed to pay just so much and no more for pottery made in this country. Foreign competition is spirited, and the moment they ask prices beyond what the trade thinks American pottery is worth, the foreign goods are selected. The foreign competition promises to be even keener in the future, too, they argue, because of the new tariff agreement with Germany and the relaxation of official vigilance in the matter of French goods.

When the conference first opened there were twenty-eight propositions in dispute, and late Wednesday night it looked as if the whole proceedings would end abruptly and without any settlement being reached. Both sides, however, got together and remained behind closed doors until early Thursday morning.

After a long argument the scale was compromised and the second proposition relating to the scale of wages to be paid to the kiln men or burners who prepare and bake the pottery was taken up.

This proposition was also adjusted in a manner to please both sides. With these two propositions out of the way the scale of wages for the next two years in the pottery world was taken up, and after a few minor changes were made the scale was affirmed for two years more and the conference then adjourned.

## JOSEPH STAFFORD

Joseph Stafford, who died at St. John's Hospital Saturday evening, September 7, aged 82 years, was a man who left the impress of his personality upon the community in more ways than one. He was a native of Sangamon County, Ill., of which his family were among the earliest settlers, and was born in Rochester, where his parents, Oliver and Polly Sattley Stafford, arrived in 1825. The Stafford family have a long and honorable record in the county as well as in the nation where they were ante-revolutionary settlers.

Joseph Stafford is probably best remembered for his discovery of shale as a material for making brick and his efforts to introduce the manufacture of shale brick. He began this work some years ago while residing at Galesburg and afterward came to Springfield and made investigations which resulted in the discovery of immense and valuable beds of shale in this vicinity which have since been utilized in the manufacture of paving brick, building up a new and profitable industry for Springfield. Mr. Stafford was an enthusiast on the subject of brick, tile and pottery and had a fund of valuable information on the subject. He was a thorough expert in the matter of locating deposits of raw material.

His spirit was of the pioneer at all times and his stories of early times in Sangamon county were always full of interest. The most exciting period of his life, however, was when as a mere boy of twenty, he joined a party of "forty-niners" and went across the plains to Oregon and California in the days of the gold fever, a journey which was full of adventures with hostile Indians and hairbreadth escapes from fierce wild beasts. Mr. Stafford loved to dwell upon these experiences and some time ago a very interesting sketch of his trip across the plains, compiled from his own narration, appeared in *The News*. At the time he was taken ill, Mr. Stafford was preparing for this paper other stories that were leaves taken from his frontier experiences. He had been in failing health for some time, but always had a pleasant greeting for his friends, especially those of the younger generation, to whom in his lonely old age he turned for companionship. Since the death of his second wife, Mr. Stafford has continued to reside in Springfield, keeping, however, in constant communication with his sons, Burt and Frank, who reside at Galesburg. His first wife was Mytilene Ann Bowling and the two sons mentioned were their only children.

Mr. Stafford was a man of sterling character and was for many years a regular attendant upon the services of the Presbyterian Church.

The funeral took place from the undertaking parlors of Metcalf & Branson, at Sixth Street and Capitol Avenue, at 3 o'clock this afternoon. The Rev. J. B. Rogers of the Baptist church officiated and the interment was made in Oak Ridge cemetery.

The pallbearers were: J. W. Jefferson, A. L. Converse, I. R. Diller and Lincoln DuBois.—*Springfield News*.

## NEW MANAGEMENT FOR THE HORTON MFG. CO.

The controlling interest of the Horton Mfg. Co., of Painesville, Ohio, manufacturers of the "Hercules" and other standard types of brick making machinery, has been sold to Herbert W. Cole, who has assumed the general management of the business. The character and quality of the machines manufactured by the company will be improved in every possible way, and we are advised that they solicit the business of every brick maker in the United States, who is desirous of improving the quality and the amount of his output.

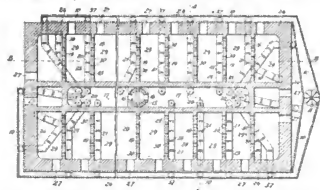
## CLAY RECORD.

## NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

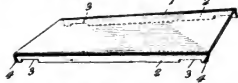
857,702. Brick-Kiln. Henry J. Williams, Spokane, Wash. Filed Jan. 20, 1907. Serial No. 354,634.

Claim.—In a kiln for burning, drying and cooling brick or other articles of earthenware manufacture, the combination of a number of units or apartments as receptacles for the articles to be treated, arranged side by side around an inner air chamber separated by a wall from such units or apartments, openings in the partitions between the units or apartments for the passage of atmosphere, a continuous air chamber around the outer lower surface of the kiln communicating with a fan and with an air chamber underneath and connected by openings to each unit of apartment, such air chamber underneath the separate units communicating also with a centrally disposed inner air chamber in which is placed a flue with openings from such flue to such inner chamber.



a continuous air chamber around the outer upper surface of the kiln and also the inner upper surface of the different units or apartments, each communicating with the said units, an air chamber between the arch of each unit or apartment and the upper or finishing wall of the kiln, openings or apertures extending through the upper or finishing wall of the kiln and through the arches of the different units or apartments into the open space or chambers of such units or apartments, all air chambers and passages leading to the separate units or apartments provided with valves for the opening and closing of the same, each unit or apartment having an opening from the outer surface of the kiln as means of ingress and egress for materials to be treated, substantially as set forth.

859,377. Tile-Machine. George Ferguson, Waterloo, Iowa. Filed Feb. 8, 1907. Serial No. 356,332.



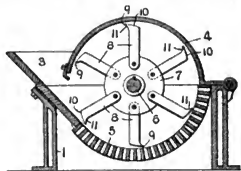
A brick pallet having downwardly extended side flanges formed with recesses for engaging the frame of a car, and wings extending laterally at opposite ends of the pallet.

A brick pallet having downwardly extending side flanges formed with recesses for engaging the frame of a car, the extreme ends of said flanges being bent outwardly to form wings.

858,772. Hammer for Crushers and Pulverizers. Milton F. Williams, St. Louis, Mo., assignor to Williams Patent

Crusher & Pulverizer Company, St. Louis, Mo., a corporation of Missouri. Filed Sept. 18, 1905. Serial No. 278,997.

In a crusher and pulverizer, the combination of a casing having a grinding surface, a cover and a hopper, a rotatable hammer support, hammer upon said support of a substantially rectangular shape having its front and rear edges straight and parallel approximately throughout its length, the end of said hammer being inclined at an obtuse angle to the rear edge thereof, and terminating in a point from which a throat curves downward to meet the front edge of the



hammer, the said inclined end forming an elongated surface coacting with said grinding surface whereby the hammer may be worn down and still retain its pointed shape.

855,136. Fireproof Material. Keizo Sakurai, San Francisco, Cal., assignor of one-third to Gustav Abrahamson, San Francisco, Cal. Filed Dec. 1, 1905. Serial No. 289,869.

Claim.—As a new article of manufacture, a fireproof building material consisting of a vehicle characterized as having a specific gravity of approximately .6 and being relatively rich in silicon oxide and capable of being reduced to a fine non-gritty powder, and a suitable binder.

As a new article of manufacture, a fireproof material consisting of a vehicle characterized by having a specific gravity of approximately .6 and containing approximately 50 per cent of silicon oxide and containing not to exceed approximately 30 per cent of aluminum oxide, and a suitable binder, said vehicle and binder mingled in approximately the proportions of ten-parts of the vehicle to four-parts of the binder, said binder consisting of a mixture of clay and dead-burnt-gypsum.

858,706. Screen. William R. Cunningham, Bucyrus, Ohio, assignor to the American Clay Machinery Co., Bucyrus, Ohio, a corporation. Filed April 13, 1907. Serial No. 368,115.

An improved screen consisting of a frame having parallel sides, and parallel ends, said ends being formed of members angular in cross-section and having end flanges by which they are bolted to said sides, one of said end members having an inclined wall provided with pins and the other member

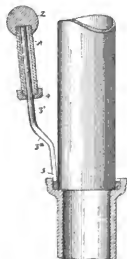


having an inclined wall provided with turning-pins, rods or bars fixed to the sides of the frame and extending longitudinally along the upper portions of the end-members, said rods or bars being provided with screw-threads, wires strung between the pins at the opposite ends of the frame, and seating in and being spaced by the threads of the rods or bars, distance-pieces intermediate of the end-members and bolted to the sides of the frame, and rods or bars fixed in the sides of the frame and extending along the distance-pieces, and having threads across which the wires extend and in which they are seated and their intermediate portions held in spaced relation.

858,938. Calking-Tool. Theodore G. Ames, Elmhurst, Cal. Filed Aug. 28, 1906. Serial No. 332,371.

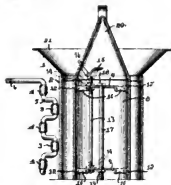
An improved calking tool consisting of a bit and a readily removable handle therefor, provided with a weight, said bit comprising a shank portion and a calking portion, and said handle portion having a bottom opening normally of a size which adapts the handle to be readily slipped over the shank, and removed therefrom.

A calking tool comprising a hollow-tubular-weighted handle at one end, a removable perforated-cap, fitting the other end, and a removable point loosely fitting said perforation and handle and having a stem whose diameter does not exceed that of said perforation, whereby said stem is freely removable from the handle without disturbing said cap.



858,638. Tile-Mold. John J. Swenson, Roswell, N. Mex. Ter. Filed Sept. 17, 1906. Serial No. 334,909.

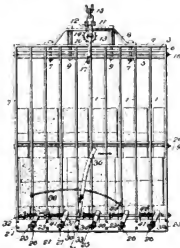
In a tile mold, an exterior shell, and a collapsible core, said core comprising a cylindrical sheet of metal, a bolt axially arranged therein having a nut adjustably mounted on its lower end, two disks loosely mounted on the bolt and rigidly spaced apart, toggles secured to the edges of the disks and to the interior of the core, and a handle at the upper end of the core.



In a tile mold, an exterior shell, and a collapsible core, said core comprising a cylindrical sheet of metal, a bolt axially arranged therein having a nut adjustably mounted on its lower end, two disks loosely mounted on the bolt, two tie rods through said disks having their ends screw threaded three pairs of nuts on each rod, two at the top and one at the bottom, two of said pairs engaging with said disks, and a handle upon the upper ends of said rods with its ends between the top pairs of nuts.

859,445. Brick-Handling Machine. William H. Francis, Cherryvale, Kans., assignor of one-half to Charles Francis, Independence, Kans. Filed Dec. 18, 1905. Renewed Dec. 11, 1906. Serial No. 347,360.

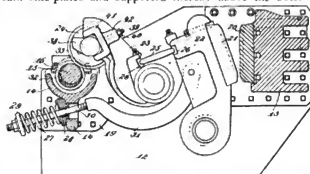
A machine of the character described, comprising a vertically disposed frame, laterally extending arms carried by the upper end of said frame, supporting means carried by the outer end of said arms, and laterally extending clamping jaws carried by the lower end of said frame.



A machine of the character described, comprising a vertically disposed frame, laterally extending arms carried by the lower end of said frame, gripping jaws linked to the outer end of said arms and having their inner ends journaled in elongated horizontal slots, operating arms carried by journals of said gripping jaws, an operating lever, and a spring connection between said lever and operating arms.

859,348. Crusher. Thomas L. Sturtevant, Quincy, and Thomas J. Sturtevant, Wellest, Mass., assignors to Sturtevant Mill Company, Portland, Me., a corporation of Maine.

In a crushing machine, the combination with a frame comprising relatively thin side plates, a head block or front cross beam, and a rear cross beam separate from but secured to said side-plates and supported thereby above the bottoms



thereof, of a driving shaft the bearings of which are supported by said rear cross beam whereby said relatively thin side plates are relieved from the direct strain of the driving shaft, a cam or eccentric carried by said shaft, a stationary crushing plate, a crushing lever pivoted at its lower part to said side plates, a crushing plate mounted on said lever, an operating lever having a roller bearing against said cam or eccentric, a thrust plate or toggle interposed between said operating lever and the upper part of the said crushing lever, and a spring and suitable connections for retracting said crushing lever and for holding said bearing-roller in contact with said cam or eccentric.



## CLAY RECORD.

PUBLISHED SEMI-MONTHLY BY THE

## CLAY RECORD PUBLISHING COMPANY,

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 GEORGE H. HARTWELL, Editor.
 

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"I like to read American advertisements. They are to  
themselves literature, and I can gauge the prosperity of the  
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the  
very time that advertising should be the heaviest. Ninety-nine  
out of every hundred merchants advertise most when there is  
least need of it, instead of looking upon advertising as the pan-  
acea for their business ills.—John Wanamaker.

## CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick  
and Tile Association will be held at Des Moines, Iowa,  
January 22 and 23, 1908.

The fifth annual convention of the Canadian Clay Products  
Manufacturers will be held at Ottawa, Canada, November  
19, 20 and 21, 1907.

The fourth annual convention of the National Association  
of Manufacturers of Sand-Lime Products will be held at  
Columbus, Ohio, December 4, 5, 6, 1907.

Success is the magic word that leads to victory.

A wise man is he who always knows exactly what should  
be done next, and then quickly does it.

It is not the man who says the loudest Amen who  
makes the most impression on heaven.

Subscribe for the Clay Record today—tomorrow never  
comes. It is the only clay journal in America that is  
printed twice a month. Its cost is nominal—only one dollar  
for twenty-four issues or one long year. Your money re-  
turned if you don't get it worth three-fold.

Advertise in the Clay Record. A few dollars spent  
wisely there may bring you good returns. The only way  
to know this is to try it. Do it now.

Will power is the electricity which gives the impulse to  
every thing we do, great and small. The more of it we use,  
the more it generates for further use.

BRICK PAVEMENTS PROMOTE THE GROWTH  
OF SMALL CITIES

That brick pavements promote the growth of the smaller  
cities by improving the appearance and usefulness of the  
streets and inciting the property owners to improve the  
appearances of their houses, etc., lawns and walks and thus  
making them more attractive is the claim of an article in  
Municipal Engineering Magazine about the pavements of  
Paris, Ill.

Paris is one of the richest agricultural regions in the  
country and its interests are almost entirely agricultural.  
The appeal which its character and conditions makes to  
the retiring farmers and to those moving in the city to edu-  
cate their children is strong, and what the city spends in  
municipal improvements is conceded by all its public-spirited  
citizens to be money well invested.

During the past seven years this little city of about 6,500  
people has spent from \$15,000 to \$48,000 a year for new  
brick streets, with a total of \$189,534, and this year will  
spend about \$70,000 more. These pavements cost an aver-  
age of \$1.75 a square yard, including all items of construc-  
tion or a trifle over \$30,000 a mile. This is equivalent to  
\$.58 a foot of length of a street 30 feet wide which is the  
average width in Paris.

Municipal Engineering says that an inspection of the  
brick streets of Paris made for that magazine shows that  
they are uniformly of the highest grade and can well be  
studied by other cities as examples of the excellent results  
obtained by using the best methods of construction. There  
is no visible reason why they should not retain their present  
condition for generations even if there is a material increase  
in travel over them. On streets with light travel the wear  
is inappreciable and there is no appreciable deterioration  
from other causes. This permanence is one of the strong  
arguments in favor of brick pavements particularly in  
small cities.

PLANT OF THE STANDARD BRICK AND TILE  
COMPANY OF NEW GLASGOW,  
N. S., BURNED

Fire destroyed the entire plant of the Standard Brick and  
Tile Company causing a loss estimated at \$300,000, and  
throwing 100 men out of employment. The fire started in  
the "pottery" and swept through the entire plant, carrying  
down building after building, the burning tar and oil illu-  
minating the surrounding country for miles. Several freight  
cars and half a dozen coal hoppers on the railroad siding  
were also destroyed.

The buildings were valued at \$150,000 and the machinery  
at the same amount.

## OBITUARY

Thomas W. Stevenson, aged 64 years, died at East Liverpool, Ohio. He was a resident of the pottery town for 27 years and foreman of the R. Thomas, & Sons plant.

William H. Wensel, age 50 years, died at his residence in 209 Dinwiddle St., Pittsburg, Pa. He was engaged in the brick making business under the name of Wensel & Brothers for many years.

Julius Belknap, the senior member of the firm of Belknap & Phillips, manufacturers of brick, at St. Clair, Mich., is dead. He was born in 1834 and came to St. Clair in 1851. He was in the brick making business since 1871.

Joseph Stafford, age 82 years, died at the St. John's Hospital at Springfield, Ill. It is claimed that he is the discoverer of shale for making paving brick. He was well known to the older clayworkers of the state of Illinois.

John C. McNichol, for many years connected with the pottery business at East Liverpool, Ohio, is dead. He was 43 years of age. Five John McNichol's, all of the same family, died in the same house, within the past fifty-eight years.

## FIRE! FIRE! FIRE!

The buildings and machinery of the Fairview Brick Company were destroyed by fire, causing a loss of \$15,000.

Fire caused by sparks from an engine totally destroyed the stables of the Bromilaw Brick Co., Alexandria, Va.

The main building of the Enid (Okla.) Vitrified Brick Co. was totally destroyed by fire. Partly covered by insurance.

Fire broke out in the main building of the Mt. Gilead (O.) Pottery Works and the interior of the building was entirely burned out.

A small fire occurred at the brick works of the Geo. F. Weaver's Sons Company at Utica, N. Y. The loss is fully covered by insurance.

The brickyard of J. E. Whitesides, Corsicana, Texas, suffered a loss by fire. Same is covered by insurance and will be repaired at once.

Fire caused a damage to the extent of \$1,000 in the engine room of the Kyle Rock Co.'s brick yard on Vine St., Kansas City, Mo., cause is not known.

Fire destroyed the entire plant of the Standard Brick & Tile Co., New Glasgow, N. S., causing a loss of \$300,000, and throwing 100 men out of employment. The plant is partly covered by insurance.

The plant of the Valley City Brick Co., Grand Rapids, Mich., was damaged to the extent of \$15,000 by fire. The fire originated in the kiln. H. D. Brown, president of the company, states the plant will be in operation again in a few days. Insurance, \$5,000.

## BRICKS, LIME AND CEMENT IN NEW YORK

Demand for all grades of brick continues heavy, and under the small shipments of Hudson River brick from the manufacturing section, prices on this grade are still firmly maintained on the basis of \$6.75@7.25 for common, and, although some small lots have been disposed of at \$6.50, shading of quoted prices is exceptional. It is not expected that the market will show a decline for the year. Demand for all grades of cement continues of only fair proportions, with prices firmly maintained at unchanged quotations.

## ACCIDENTS, DAMAGES AND LOSSES

John Gordon, seven years old, is suing the Boone (Ia.) Brick, Tile & Paving Co. for \$20,000 damages for injuries received by him.

The caving in of the clay bank at the Phoenix Brick & Construction Co.'s plant at St. Joseph, Mo., badly bruised a workman named Bimstey.

Perry Moon, age 60 years, was buried beneath a clay bank at the Hartford Brick & Tile Co.'s plant in Hartford City, Ind., and was instantly killed.

The Star Brick Co., Iola, Kansas, has been sued for \$5,000 damages for alleged injuries to Fred Kinser, who got his hand caught in a pug mill.

A damage suit has been filed against the Hamilton (O.) Brick Co. for \$15,000 for the death of D. S. Carroll, alleged to have been killed at the plant of the company.

The premature discharge of powder in the pit of the Metropolitan Paving Brick Co.'s plant, Canton, O., seriously injured one man and imperiled the lives of four others.

The New England Brick Co. suffered a \$4,000 damage at its Troy, N. Y., plant by a heavy rain which backed water into the brick kilns and into those that were being burned.

L. A. Hill, a blacksmith, is at the hospital in Iola, Kansas, in a critical condition on account of wounds received by an explosion of a dynamite cap at the Portland Cement works.

Henry Whiles, former foreman of the Renova (Pa.) Fire Clay Works, was so injured by an explosion in the clay-mines that he died three hours after and another miner is in a serious condition.

Judge Endlich granted a rule to make service in the equity suit of Frank Richards against the United States Brick Co., asking for a receiver within 15 days and for them to file answer within 30 days.

The Rookwood Pottery Co., Cincinnati Ohio, has brought suit against the Carnegie Educational Institution of Pittsburgh to recover \$2,300 due for material furnished for the construction of the buildings.

Creditors of the McNeil Pressed Brick Co., Newbern, Ill., have filed a petition in the United States Court alleging that the company is insolvent and asking that it be adjudged bankrupt and a receiver appointed.

## BURNING SAWDUST PROVES SUCCESSFUL IN MAKING BRICK

The Intermountain Building Material Supply company is a Boise, Idaho, manufacturing corporation which is entirely independent of the coal dealers as they have their plant arranged so they are burning sawdust and are now turning out an average of 18,000 brick per day.

Mr. Koelsch stated that they had been burning sawdust for some time as an experiment and it had proven so successful that the plant would close in order to make necessary improvements for its use during the entire winter and they would be able to turn out several million of brick, which are already ordered in spite of a scarcity of coal.

This company is furnishing brick for the capitol building, the new Carnegie library at Nampa, the bank building at Vale and several others and has enough brick ordered to run the plant during the entire winter.

### CLAY RECORD ALWAYS GLAD TO MAKE CORRECTIONS

EDITOR OF CLAY RECORD:

In your issue of Aug. 30th, there appears on page 29 an article which reflects on the credit of the Malvern Clay Co., of Malvern, Ohio, and the Collinwood Shale Brick Co., now The Collinwood-Deckman-Duty Co., of Collinwood, Ohio, with offices at rooms 854-856 Rose Bldg., Cleveland, Ohio. So far as this article is concerned in reference to the above-named companies, it is absolutely false, and there are no grounds for the statement made therein whatsoever. Each of the above companies referred to have shipped to the Department of Public Works, under Com. Haarer's supervision and instruction, more block than we contracted to ship during this season, and we are still shipping block in excess of the quantity so contracted, in order to relieve a stringent situation, and possibly help out other manufacturers. In justice to ourselves, we think that a correction in your next issue as to this statement would be due us.

THE COLLINWOOD-DECKMAN-DUTY CO.

By Chas. J. Deckman.

EDITOR—Since receiving the above letter we have a copy of a letter from Commissioner Haarer of Detroit, coinciding with the above letter and stating "That the quality of the paving shipped to Detroit this year has been excellent, better than ever before, referring to the brick of all the companies with whom the city has contracts, and the companies are filling their contracts at my request." The article referred to was taken from a Detroit daily press paper.

### TOWN OF SEBRING HAS "GONE BROKE"

Although the village of Sebring, Ohio, has a population of 3,000, and is noted as a pottery manufacturing center, it is in dire financial straits. The village council has had no meeting for several weeks, and, as Councilman Schewell expresses it, "there is no telling when there will be a meeting. We haven't a single dollar with which to pay bills, so there is no use of meeting."

The town was laid out eight years ago by five brothers named Sebring, who now conduct potteries, employing 1,500 men and women. It has paved streets and municipal water and light plants. When the village was laid out and lots were sold there was a clause in every deed that no liquor should be sold on the premises. Therefore it has never had a saloon, and as the tax has been low the village has been unable to meet its bills.

### MR. ABBE RETURNS FROM EUROPE

Mr. Max F. Abbe, president of the Abbe Engineering Co., N. Y., has just returned after a five months' trip to Europe. He visited England, Belgium, France and Germany. In several of the countries he made contracts for the manufacture of his Tube Mills and Linings under various patents that he owns. In Germany he made a contract with the Fried. Krupp Aktiengesellschaft Grusonwerk, at Magdeburg-Buckau, for the building in the United States of their celebrated Excelsior Mills, of which the Krupp people have sold 30,000 in various parts of the world. The Abbe Engineering Co. will be ready within a month to supply the trade with mills of this type.

### DENY BRICK SHORTAGE AT SPOKANE

Failure to receive brick and other building materials has resulted lately in delaying the construction of some of the buildings now in process of construction in Spokane, Wash. Information obtained from the Idaho Brick and Lime company and from the Washington Brick, Lime and Manufacturing company indicates that the difficulty has lain with the railway companies to a large extent, and is not chargeable to any lack of material at shipping points.

J. Evans of the Idaho company said:

"We are not short on brick. While there is an increase over last year's demand of 35 per cent, we have been able to meet all demands and now have on hand at Mead and Allany Falls 2,000,000 brick. For a time in June we were short, but since that we have been able to keep up with the contractors. We are centering our chief efforts on the work going on within the city, as it is there the greater demand exists. Outside points are asking for no more material than last year."

J. H. Spear of the Washington Brick, Lime and Manufacturing company in speaking of the delay said:

"There is no shortage in brick. At Clayton and Free-water we have 300 carloads ready to ship if we could get the cars. While there has been no serious delay in buildings for which we are furnishing materials, a slight shortage has kept them back, within the last few days. It is difficult to get cars for the companies are now strictly enforcing their rule of not allowing their cars to leave their own tracks, and we have been forced to wait for transportation a great deal this summer. In bringing brick down from Clayton we have even been compelled to load a car there and transfer the material to other cars at our own expense here in Spokane, because the company refused to let the car off its own rails."

### DEMAND FOR BRICK IN MONTANA GOOD

The demand for brick from all parts of northern Montana during the past six months has been so great that it is almost impossible for the brick yards to supply it. Coombs & King, the Great Falls brick firm, are literally swamped with orders, which are pouring in every day.

Among the orders which have been received by this firm within the past few days are the following: Three hundred and fifty thousand brick for Smith Bros. & Hill, who have the contract for extending the Great Northern roundhouse and machine shops at Havre; 125,000 for Ed. Winegard, who holds the contract for building the city hall at Havre; 75,000 for George Hanks, for building purposes at Havre, and 125,000 for the new Bell telephone building at Great Falls.

### REPORTS MISLEADING TO STOCKHOLDERS

President C. D. B. Howell of the Illinois Brick Company takes strong exception to the various reports circulated about earnings of that concern. He declares they are entirely misleading to stockholders, and that the only official report is made at the annual meeting once each year. The company has had, and is now doing, a very satisfactory business, but the earnings have been exaggerated.

## BRICK MANUFACTURE IS BIG INDUSTRY AT PORTLAND

The output of the brick kilns of Portland, Oregon, and vicinity amounts to about 440,000 per day. The factories are in operation usually during the months of May, June, July, August and a part of September. The pressed brick, or facing brick, are nearly all from the Pacific Face Brick company, which was formerly the Newberg Brick company. This is the only plant of the kind making a specialty of pressed brick for this market. The output of this factory for 1907 will be about two and a half millions of pressed and stiff clay brick.

This gives one some idea of the amount of brick used in the construction of Portland's buildings. The number of of facing brick used in a building is not so great as one might suppose, as they are only used as a veneer, or face, the balance of the wall being constructed of the common red brick. The walls of the new Wells-Fargo building contain only about 100,000 of stiff clay facing brick.

The cost of manufacture has materially increased, owing to the advance in the price of wood and labor. Wood is about \$1.50 per cord higher than last year. Laborers are paid from \$2.50 to \$4 per day of eight hours. It seems almost impossible to get men to cut wood at any price. Wood dealers say that it is not safe to bid on furnishing wood under contract for that reason.

Common brick is selling for \$10 per thousand, delivered. Pressed brick for \$42.

The following are the principal factories supplying the Portland market with the approximate thousands capacity daily: A. N. Wills, 40; St. Johns Brick company, 15 to 20; Western Clay Manufacturing company, 33; L. E. Kern, 40; James Anderson, 32; Peter Hobbirk, 20; Theodore Jensen, 20; Henry Heerd, 20; A. Hoomisson, 15; McMahon Brothers, 25; Hoover, 20; Kalk & Son, 22; Estacada Brick & Tile company, 15; Randles & Kinsey, 30; Close Brick company, 32; and Frieburg Brothers, now building a factory on the Canyon road with a capacity of 40 thousand.

The Pacific Face Brick company now has its factory at Newberg, but will soon erect a new plant costing about \$150,000, at Willamina. A railroad is being built from Sheridan to their clay bank near Willamina, about seven miles from Sheridan. The output of this plant will be 40 thousand per day of dry and stiff clay face brick. This company has a special process used in the manufacture of its products. It may be interesting to know that the red clay used comes from Newberg, the white clay from Willamina, and the buff clay from Buena Vista. With these clays different shades of brick are made by varying the proportions.

The Diamond Brick company, office at foot of Ankeny street and works near Vancouver, have a capacity of 25,000 brick a day, but its main products are all kinds of sewer pipe, drain pipe, fire-proofing and terra cotta chimneys. The company employs 70 men.

## 15,000 PORCELAIN WORKERS LOCKED OUT THROUGH LABOR TROUBLES

Limoges, France—Owing to labor troubles the two big Haviland porcelain factories here have been closed, and 15,000 workmen are locked out.

## CLAY BED NEAR PRAIRIE VIEW NORMAL IS BEING INVESTIGATED

It is highly probable that in the near future, or during the fore part of the present session of school, the manufacture of brick, both as a source of saving and revenue to the State and as a means of practical instruction to the students, will be adopted by the Prairie View, (Texas) Normal and Industrial College. The board of directors of the institution have the matter under consideration, and so far as they have gone in investigating the feasibility of the plan, regard it with favor. A few days since a committee having other business at the institution inspected a clay bed adjacent to the grounds which is said to be of an excellent quality for brick making, and as a result a number of samples were moulded, and sent to Houston for burning. When these are submitted to the board a definite decision in the matter will be reached. Shortly the erection of three new buildings will be begun at the school, in which brick will be used to a large extent, and in event of the proposed enterprise being established the saving in that connection alone will be no small item.

## NEW BRICK PLANT AT WELLSTON WILL MAKE A NEW KIND OF FIRE BRICK

The Wellston, Ohio Sentinel says:

"For the past ten days a number of gentlemen have been in this city arranging and promoting the completion of an important new enterprise. A brief history of the matter is summed up in the following statement:

An English chemist, a former professor of chemistry in the University of Oxford, England, has discovered a process by which fire brick when chemically treated is rendered impervious to extreme degrees of heat. Tests, many of them, have been made and the preserved brick have withstood the remarkably high registration of 4,000 degrees. Fire brick when so treated may be used under all conditions, and in all places where usually required and will last many times longer than brick not so treated. The importance and saving of this is obvious. In fact, the discovery is one of the most valuable made in recent years. No special grade of brick is required, the common kind when treated with this process will make first grade brick. The process is simple but effective.

Judge J. L. White, of New York, represents the discoverer, and with Mr. B. F. Howland, also of New York, and E. B. Bingham, of Toledo, have been at the Wells hotel for the past ten days, and have been in negotiations with some of our citizens for the location of a plant here for the manufacture of the process. A contract has been closed under which a charter has been taken out under the laws of Ohio, and a corporation organized here.

The new corporation is to be known as the Ohio Fire Brick Company, with a capital stock of \$50,000.

The organization was effected by the election of W. B. Carrington, J. M. Partridge, J. M. James, E. B. Bingham, J. L. White and B. F. Holland as directors. W. B. Carrington was elected president and general manager. J. L. White was elected vice-president, J. M. Partridge was elected secretary and treasurer, and E. B. Bingham, general counsel."

## CLAY RECORD.

### MAKE BRICKS FROM THE NILE

Bucyrus, Ohio, Brick machines will be used in transforming clay from the banks of the river Nile into brick to be used in Egypt. Some time ago samples of the clay from the bed of the great Egyptian river was received in Bucyrus for testing to see if it were suitable for making into brick. The test was satisfactory and an order was placed by the people in Egypt for the necessary machinery to start a brick factory. The machinery has been shipped and in due time will be transforming clay from the Nile into building brick.

### RED WING CAPITALISTS SECURE CLAY LAND NEAR FORT DODGE AND PREPARE TO RUSH WORK

Red Wing, (Minn.) capitalists have secured enough clay land near Fort Dodge, Iowa, to enable them to operate a large sewer pipe plant for a long term of years. It will be a rival to the Plymouth Clay Products company which is just completing its buildings in this city. The Red Wing people Plymouth Clay Products company of this city sent a quantity of clay to Red Wing to be burned and otherwise tested. They soon began a quiet investigation on their own account and are now thoroughly convinced of the quality and quantity of the raw material to be had and their purchase of clay land is the first step in what will be another large sewer pipe factory for this city.

The clay is secured below the gypsum rock taken out by the stucco mills and is a vein of ten feet. Its quality is unusually pure and there is no waste. Shortage of clay at Red Wing will have a tendency to rush their plans along so that next spring will witness activities along the building line. By that time the Plymouth Clay Products will be turning out sewer pipe and the plant of the Lehigh Brick & Sewer Pipe company recently organized will have their plant at Lehigh completed.

### STOCKTON TO HAVE BIG GLAZED BRICK PLANT

The second fire glaze and enamel brick plant west of the Mississippi River is nearing completion on the 10-acre tract of the Stockton, Cal., Fire and Enamel Brick Company, just outside of the city limits, and will go into active operation October 15. Heretofore contractors have had to go out of California to purchase glazed brick. The Stockton plant will make a specialty of this particular brick.

The company is organized and owned by Stockton capitalists. Two hundred thousand dollars is the sum invested, the plant is fully equipped and considered by experts to be modern in every respect.

It has a capacity of 30,000 brick daily and is situated near an abundant supply of high-grade clays. When running in full shift it will employ about 150 skilled men.

The superintendent of the company states that enough San Francisco contracts have been obtained to keep the plant in full operation night and day for four months. The scarcity of building material in central portions of the state will keep the plant busy for a year or more without touching local trade.

### NEW MEN FOR ILLINOIS CERAMIC SCHOOL

Two new men have been engaged for the ceramics department University of Illinois at Champaign. Mr. Stull, expert in terra cotta work, comes to take charge of the work in Illinois. Herford Hope, expert in pottery, and a graduate of the Ohio State University, has also been added to the department. Both are men of considerable practical experience, the latter having been engaged in the practical work both in England and America.

### DRIVER IS HURT IN MIX-UP WITH POLICE

R. Paschall, of Sixtieth and Kingessing avenue, manager of the Luten Brick Company, Philadelphia, Pa., clashed with the police authorities, and as a result it was necessary for him to be taken to a hospital.

Paschall, driving a carriage in which was \$1,600, which he had just drawn from bank for the purpose of paying off the brickyard company's employees, attempted to cross Juniper street at Market street during the parade of the Patriotic Order Sons of America, and in resisting arrest it is alleged that he struck two policemen with his whip, while he was injured in being dragged from his carriage.

After being taken a prisoner to police headquarters he collapsed, apparently from the injuries he received, and was taken to the Hahnemann Hospital, where his married daughter, Dr. Helen P. Proctor, of 3218 Dauphin street, who was summoned, assisted the hospital doctors in attending to him.

Paschall's horse and carriage and the money that was in the vehicle were taken charge of by the police. Paschall will be arranged today in the Central Police Court.

### MAKES CEMENT BRICK BY POWER

Wilburn F. Conrad, 938 West Thirty-first street, Indianapolis, has patented and has in operation what he says is the only power machine for the making of cement brick. Although he has been working on the machine for three years this summer is the first time that a practical demonstration of its has been attempted. The machine is at Northwestern avenue and Poach street.

"With this machine we can make 30,000 brick a day, or 3,000 an hour, and the common grade of brick, made of one part cement to six parts sand, can be manufactured for \$3.50 per thousand, about \$2 cheaper than the same grade of clay brick," declared Conrad recently. "The finest grade of brick can be made at the same speed, and our labor costs us but 50 cents per thousand brick. The machine itself can be put on the market for \$3,000."

The machine for making the cement brick is similar in many ways to clay brick machines. The cement for the model machine is mixed in a revolving cylinder and carried to the hopper in buckets on an endless chain. From the hopper the cement drops down to a feed box and on down into the molds where the cement is pressed under 60,000 pounds pressure. The brick, six in a mold, are discharged from the molds on an off-bearing board in such a way as to prevent the "green" brick from cracking. After seven days' seasoning the brick are ready for building purposes.

"We have been demonstrating the machine under difficulties," said the inventor, "but we have managed to turn out ninety-five perfect brick out of every hundred. Heretofore cement brick have been made only by hand and this is the only power cement brick machine patented. From our demonstrations so far the machine is a success in every way."

**SAND OR LIME BRICK OR BLOCK NEWS**

D. H. Fitch of Elk Creek, Nebr., is putting in a plant for the manufacture of brick blocks.

The Bond Sandstone Brick Co., Lake Helen, Fla., is now turning out 30,000 sandstone brick daily. They use the Konimick system.

Bruno Konmick of Germany made a visit to Saginaw, Mich., where he is interested in the American Sandstone Brick Machinery Company.

The Birmingham (Ala.) Architectural Stone & Brick Co. has resumed operations after several weeks' shut-down on account of the illness of I. T. Houser.

The Webster City (Ia.) Cement Pipe & Tile Co. are erecting an addition to their factory 80x52 feet, so as to keep up with the demands for their goods.

The figures for 1906 of the Houston (Texas) White Brick Co., to the Secretary of State are: capital, \$125,000; output, 5,000,000 brick; employees, 40 workmen, with payroll of \$6,000.

The Sagnaw (Mich.) Sandstone Brick Company is making one-half million brick a month and shipping more than that a month at present. The factory is sending brick to all points in upper and lower Michigan.

The Falls River (Mass.) Brick & Concrete Company has been incorporated with \$400,000 capital stock. William Dacey is president, Francis M. Hunter, treasurer. Directors are the above, and Eugene Sullivan. The works will be located on Meridian Street, where five acres of land have already been purchased.

John R. Davis, West Nanticoke, Pa., contractor, will open up a brick yard on the west side near the Ry. station.

The manufacture of sand brick from the tailings of smelters is undergoing thorough tests at Anaconda, Montana.

Bricks are to be made of the borax tailings at Daggett, Calif., by the large Borax Company which operates on the Pacific coast.

E. A. Unthank, the well-known contractor, has been appointed general manager of the Cheyenne (Wyoming) Cement, Stone & Brick Co.

The Intermountain Building Material Supply Co., Boise, Idaho, are using sawdust instead of coal, oil or wood with which to operate their plant.

The Granite Brick Co.'s plant at Memphis, Tenn., has been transferred to Luverne, Minn., where the Luverne Pressed Brick Company is installing it.

The Spokane (Wash.) Plaster & Brick Co. has been incorporated with \$100,000 capital stock by C. W. Hadley, W. H. Orr, and J. B. Schrock.

The Minneapolis (Minn.) Sandstone Brick Co. will have a capacity of 40,000 sand-lime brick a day as soon as the factory is completed. Edward S. Kahn, George Markham and Theodore Dunn are stockholders.

The Medelia (Minn.) Cement Tile Co. has been incorporated with \$12,000 capital stock. Incorporators are: A. E. Whiting, E. L. Brown, Charles E. Brown, E. R. Cisney, E. L. Cole, C. T. Dahl, and J. E. Haycroft.

## The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are continuous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

### CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc. are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN, will increase its capacity at least 100 per cent.



**WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.**

## MISCELLANEOUS ITEMS

A new tile factory is to be built at Medelia, Minn. The new plant of the Olean (N. Y.) Pressed Brick Co., at East Olean, is nearing completion.

The Poston Brick Co., Attica, Ind., has started the work of turning out the celebrated Oriental brick.

The output of the Ramsdell Brick Works at Denning's Point, N. Y., so far this season is 18,000,000 brick.

The Le Claire (Ia.) Tile Works has started up and is now operating with power furnished by the I. & I. Co.

The Valley City Brick Co., Grand Rapids, Mich., which suffered a loss by fire will be able to start up their plant within a few days.

The Portsmouth (O.) Brick & Terra Cotta Co. has started up its works again, which were closed down on account of a breakage in the machinery.

The Modesto (Cal.) Brick Co., under the active operation of J. W. Craycroft, has its first large kiln of brick ready to burn as soon as the oil can be supplied.

The Messrs. Mooney, who own large brick-making interests at St. John, N. B., are considering the building of a Portland cement plant in the near future.

Frank Seimmons has sold his interest in the Cumberland (Ia.) Brick Works to his partner, A. E. Hadaway, who will continue the business alone in the future.

The Ten Thousand Club, Paul's Valley, I. T., will give information as to the wants of a building brick plant at that place. An experienced brickmaker is wanted.

The Banner Clay Works, Edwardsville, Ill., is now turning out 80,000 brick daily and the quantity will be increased when the machinery is smoothed up and run to its fullest capacity.

A company is being formed at Austin, Minn., to erect a brick and tile plant at a cost of \$100,000. The clay beds adjoining the city on the east have been tested and are pronounced first-class.

The F. H. Goss Brick Co., near the smelter at Tacoma, Wash., has been bought of W. R. Rust and F. H. Goss, its owners, by the Port Townsend Southern Railroad Co. The plant is valued at \$150,000.

W. T. Brasington, Wadesboro, N. C., will build brick plants near Blacksburg and Camden, S. C., to manufacture 60,000 brick daily. The Southern Power Co., Charlotte, N. C., has contracted for the entire output.

The new plant of the Chicago Retort & Fire Brick Co. at Ottawa, Ill., has been entirely rebuilt for the manufacture of fire brick and fire clay products. The buildings are of brick and concrete and cover an entire block.

The Benton Brick Mfg. Co., of Benton, Ark., has sold a third interest in the concern to W. L. Dalton, of Hot Springs, and the firm name has been changed to the Benton Brick & Pottery Co. In addition to the making of building and fire brick, the manufacture of pottery will be taken up.

The Pocatello (Idaho) Pressed Brick Mfg. Co. has had its shale tested and returned in bricks. The clay is capable of making good vitrified brick. C. W. Gray is president, L. B. Gordon secretary, Trux Talbot vice-president, R. P. Brown, treasurer, and L. L. Wall, an experienced clay man, the manager.

A \$10,000 company is being formed at Stockport, Ia., to build a tile factory.

Parker & Hollings, Alpha, N. J., have installed improved machinery in their brick yard.

The Ceramic Brick Co., East Liverpool, Ohio, has increased its capital stock from \$10,000 to \$50,000.

The brick plant of Phillips & Bartlett, near Deadwood, S. Dak., which recently burned, will be rebuilt at once.

R. W. Stewart of Findlay, Ohio, is burning a test kiln of vitrified brick at the Ivie & Son Brick Works at Kirksville, Mo.

The Waverly (Ohio.) Brick & Tile Co. has been incorporated with \$35,000 capital stock by Richard B. Goetz and others.

All the employees of the Larimie (Wyo.) Brick Works struck for shorter hours and higher wages. The company has filled the places of the men and resumed.

Nels Anderson, who for 26 years has held the position of foreman of the yards for the Paxton (Ill.) Brick & Tile Co., resigned the position and will take a needed rest.

The Standard Brick Co., Charleston, W. Va., has a plant located on the site of the old Kanawha & New River Brick Co., which was destroyed by fire some years ago.

The Concord Brick Co., Natchez, Miss., has settled with the insurance company for the destruction by fire of their plant and the business of the company is continued.

The Munford Brick Co. has been incorporated at Camden, N. J., with \$125,000 capital stock. Incorporators are: Joseph S. Munford, Owen McCurdy, and John H. Carr.

The Bloomfield (Ind.) Vitrified Brick & Tile Co. has been incorporated with \$50,000 capital stock. Directors are C. C. Stein, Theo. Schmutz, Wm. Vannuter, Joseph S. Shroyer and Otto F. Herold.

J. S. Detwiler, Elsmore, Kansas, has made a proposition to citizens of that town to drill wells necessary to get gas to supply a brick-making plant: He holds leases on lands where shale has been tested.

The Baldwin County Brick & Pottery Co., Milledgeville, Ga., has been incorporated to manufacture common, pressed and ornamental brick and sewer pipe, by A. A. Vaughn, E. L. Barnes, T. M. Hall and others.

The Paris Press Brick Co., Paris, Texas, recently incorporated, has secured a plant already erected. The president is J. N. Blake, vice-president and manager, E. Jenkins and Wm. F. Jones, secretary and treasurer.

The Burke Sand Co., Ft. Smith, Ark., has been organized with \$15,000 capital stock. This will be operated in connection with the Burke Brothers Brick Co., which has the contract for 71 miles of brick pavement.

The Columbus (O.) Clay Mfg. Co. has been incorporated with \$50,000 capital stock to build a clay plant at Taylor Station, nine miles east of Columbus. Incorporators are: J. E. Landrum, Harry Landrum, Henry Schwillk and Fred J. Schwillk.

D. C. Richardson says that the work on the new brick plant south of Mooringsport, La., is progressing satisfactorily. The plant will be in operation within 4 months and will burn natural gas. The company's general office will be in Shreveport, La.

The Peebles Paving Brick Co., Peebles, O., has increased its capital stock from \$50,000 to \$100,000.

C. E. Broadbent & Son are building some extensive additions to the brick plant at Volant, Pa.

The Tonque Pressed Brick & Tile Co. has finished the building of their plant at Algodones, N. Mexico.

The Mt. Jewett (Pa.) Fire Brick Co. has been incorporated with \$200,000 capital stock. The incorporators are Thos. E. Mouton, J. G. Ansler and John G. Gray.

A large crushing machine has been added to the Aledo (Ill.) Brick & Tile Co.'s plant so as to make a much higher grade of glazed building brick.

The American Lime & Stone Co., Marion, Ohio, has been incorporated with \$150,000 capital stock by Henry A. Schules, Cornelius Breen and J. W. Jacoby.

The Falls River (Mass.) Brick & Concrete Co. has been incorporated with \$40,000 capital stock, W. Day is president, and the secretary and treasurer is F. M. Hunter.

The Burke Brothers Brick Works at Ft. Smith, Ark., will be ready for business about October 1st. The company built the plant on account of having 71 miles of brick paving to be laid.

The Spring Garden Brick Co., York, Pa., registered office at Camden, N. J., has been incorporated with \$100,000 capital stock. Incorporators are Clinton D. Frey, Israel Frey and Elmer E. Frey.

Another brick and tile manufacturing plant is promised for Mason City, Iowa. J. E. Blythe of Madison, Iowa, and R. H. Gentry of Kansas City, Mo., are at the head of the deal.

It is understood that Horace Libby of Lewiston, Maine, will retire from the business at the end of the season.

Preparations are being made for the extensive manufacture of brick at Rockdale, Texas, by Vogel & Lorenz.

The Pend Oreille Clay Mining & Milling Co., has leased land of W. A. McMurray of Denton. The land is near Hope, Idaho.

A nine-foot vein of kaolin on Big Creek, Gibson Co., Ind. has been found and specimens can be had from C. F. Martin of Cynthiana, Ind.

The Hanover (O.) Pressed Brick Co., is to be reorganized, the money received will be used to enlarge the plant so as to supply the product promptly. C. H. Forry is the manager of the plant.

The Berlin (O.) Brick & Tile Co., has been incorporated with \$10,000 capital stock. Incorporators are L. B. Ayres, C. A. Peake, L. S. Van Scoten, Samuel Ayers and Allen Waldron. They take over the Waldron works.

George L. Pomeroy, Kerby, Mich., who has been supplying clay to the cement plants near by has made a five year contract with the Heale Portland Cement Co., of Bay City to supply their plant with clay.

Rapid progress is being made towards the starting of the brick-making plant at San Angelo, Texas. The sheds have been constructed and they are awaiting the machinery and power plant.

The Schmitt Brick Co., Columbus, Ohio, which was incorporated last spring is now turning out 30,000 brick a day in its Marion store yard. Later it is expected they will ship shale in from the Hocking Valley.

## **The GILLETT DOORLESS Hot Air FIREBOX For Blast Kilns**

Patent No. 792,789



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

**A. GILLETT & CO.,**

Factory, St. Louis, Mo.

ALEDO, ILL.

**DIRECT HEAT**

# **DRYERS**

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**

62-64 William St.

NEW YORK CITY



## CLAY RECORD.

## DUMP CARS FOR SALE

A few good "Main Line" Dump Cars. Will be put in a Spokane. Write for description.  
Maple Car Building and Equipment Co.  
Detroit, Mich.

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete or in part. Cheap. Have several Brewer Mills for sale, and others.  
Regimes, Rollers, Crushers, Drying Piers, etc. If you wish to buy or sell write  
Brick and Tile Machinery  
Secor, Ill.

## FOR SALE

One Quincy Clay Clobber and Plow Brand new, to use only two weeks. Address:  
Rik City Brick Co.  
Rik City, Kansas

## BRICK PLANT WANTED

Wanted to buy an interest in a pressed or paving brick plant located in Central States and having down draft kilns. Will take a position as manager with privilege to purchase an interest when found satisfactory.  
Address: "Manager" Care of Clay Record,  
Chicago, Illinois

## FOR SALE

One power Regress, in number one condition, used only but a short time, capacity 3000 per day. Ask for full particulars.  
American Ramehead Brick & Tile Co.  
1 Madison Ave. New York

## FOREMAN WANTED

By a tile and brick plant in Central Illinois an outside yard foreman to take charge of setting and emptying kilns or loading, etc. Address stating experience and wages desired.  
A. B. CASE OF CLAY RECORD  
Chicago, Illinois

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.  
GREAT EASTERN LUMBER CO.  
30 Cortland St., New York.

## 50 PERCENT SAVED

Fifty percent saved on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash.  
H. H. WASH  
121 Lander St., Newburgh, N. Y.

## FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address  
Lock Box 28 CASE OF CLAY RECORD  
Chicago, Illinois

## BRICK YARD FOR SALE

Old established yard in good town of 5000 people, with good country surrounding 40 acres, good kilns and sheds. Good reason for selling. Call on or address  
CHARLES MCNEAL  
Maryville, Mo.

## WANTED

A competent and experienced manager and salesman for seed lime brick factory. Address  
BRADSHAW MAX CARP OF CLAY RECORD  
Chicago, Illinois

## FOR SALE CHEAP AT ONCE

Good Brick Yard in country, real capacity 30,000 bricks daily. Can't supply the demand, for brick at \$8.25 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood fire for hauling less than 1 mile. Plenty of labor and \$45.000 brick one contracted for. Good reason for selling. No competition. Address  
GEORGE B. BARNLEY,  
Levellville, La.

## WANTED

Wanted Stone ware Potter—both wheel and Kiln men. Write to  
SPOKANE POTTERY CO.  
Clayton, Wash.

## WANTED

A travelling salesman, a man who has a general knowledge of the brick business. Permanent employment.  
Address: B. C. Care Clay Record  
Chicago, Ill.

## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT.  
Care Clay Record, Chicago, Ill.

## MEN WANTED

Three (3), or four (4) good brick handlers, also two (2) brick kiln firms, good pay and steady work for the right men. Address  
Supt. Missouri Slope Brick and Tile Co.  
Pickinson, N. D.

## FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radium and weight rail, at special prices.  
THE ATLAS CAR & MFG. CO.  
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails 18, 16, W and 20 pound. For prices, address  
ATLAS CAR & MFG. CO.,  
Cleveland, Ohio.

## KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of kaolin ever mined in Georgia, or the South.  
L. T. JEFF, Zenith, Ga.

## FOR SALE

Clay Integrator new \$2000; Tempering Wheel used only two seasons \$450.  
C. EUGENE KEMP  
88 Locust St., Williamsport, Pa.

## MACHINERY FOR SALE

Soft mud outfit manufactured by the American Clay Working Machinery Co. consisting of Upright stock brick machines direct attached Pug Mill, Mold Sander Brick Molds 1 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition, very reasonable price. Apply to  
BALTIMORE VERIFIED BRICK CO.  
Baltimore, Md.

## PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write  
S. L. CLARK  
Redfield, So. Dak.

## WANTED

Wanted a small dry pug in good condition. Parties answering this advertisement will please give the name of the make of the pug, together with best price.  
CLEMENS JUNGERS  
Sreator, Illinois

## PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick.  
DENIS, Care Clay Record,  
Chicago, Ill.

## FOR SALE

A fine Kaolin bed of 150 acres, with strata of calcareous clay from 12 to 18 feet deep, laid over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address  
J. B. SALLEY, Attorney,  
Aiken, S. C.



Is better made, ref. row 13 and 18, 19

1 Wheel, \$3.25  
2 Wheel, \$3.25  
3 Wheel, \$3.25  
Sold by all dealers  
K. A. HART, 41 White St.,  
BATTLE CREEK, MICH.

## MEN WANTED

Six men experienced to hollow block manufacturing, highest wages, no labor trouble. Apply to  
606 Diamond Mill Building (Old Clay Products Co.)  
Pittsburg, Pa.

## MANAGER WANTED

Wanted—Manager and superintendent of a brick plant established a number of years and making high grade stiff brick. Must be competent to handle peculiar clay and make it brick, understand machinery, good business ability, the management of men, have unquestionable habits, first class reference. Address in full and in confidence stating salary expected.  
X. V. Z. Care Clay Record,  
Chicago, Illinois

## FOR SALE

One Raymond, Rotary Automatic Down Cut Cutter with 48 feet of off carrying belt and separating table. This machine is brand new, but we want it now immediately and will accept any reasonable offer.  
BARKER LACON WORKS  
Los Angeles, Cal.

## CARS WANTED

Wanted—Second hand cars and trucks. Give low cash price and condition in first letter.  
Box 12  
Independence, Iowa

## GAS ENGINE FOR SALE

For Sale—A 75 H. P. Gas Engine, complete with all tank and gasometer in good condition. Let go cheap if sold at once. Answer,  
Gas Engine, care Clay Record  
Chicago, Ill.

## FOR SALE

Startling sacrifice—Completely equipped ornamental brick plant, excellent location, on Baltimore & Ohio Railroad in Ohio, has been bonded for \$60,000, for sale unencumbered for \$10,000 cash. Address  
E. H. WATSON  
141 Broadway, New York

## BRICK PLANT WANTED

At Wenona, Illinois, one million tons of material, located on "V" of Illinois Central and Chicago Alton railroads. 150 tons of new material dumped daily. Will make good pressing brick and front building brick. Coal mine adjacent. Plenty of artesian water. For information address  
WENONA COAL COMPANY  
Wenona, Illinois

## DO YOU WANT TO SELL YOUR BUSINESS?

DO YOU WANT TO EXCHANGE PROPERTIES? DO YOU WANT TO BUY A BUSINESS? If you want to buy, sell or exchange any kind of business or real estate anywhere, any price, address  
FRANK P. CLEVELAND,  
1728 Adams Express Building  
Chicago, Illinois

## FOR SALE

One No. 26 special double shaft pug-mill, top and bottom discharge, 12 foot table, good condition, manufactured by American Clay Working Machinery Co.  
Sandusky Portland Cement Co.  
Sandusky, Ohio

## FOR SALE CHEAP

On the Pacific Coast, One Eagle Double Mold Press, practically new.  
BELLINGHAM BRICK & TILE CO.  
South Bellingham, Wash.

## POSITION WANTED

By an experienced Potter as Superintendent on turning, or in any position relating to brick making.  
Address: N. Z. Care of Clay Record  
Chicago, Ill.

## ASTORIA

One of the best places in the whole country to establish brick making plant. Now having all available clay sections fully tested and will give detailed information upon application. Water transportation all along Pacific coast and Willamette River. No brick making plant within 100 miles.  
75 Chamber of Commerce,  
Astoria, Oregon



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Single Copies, 10 Cents

#### CARDINAL GIBBONS ON ORGANIZED LABOR

Labor has its sacred rights as well as its dignity. Paramount among the rights of the laboring classes is their privilege to organize, or to form themselves into societies for their mutual protection and benefit. It is in accordance with natural right that those who have one common interest should unite together for its promotion.

Throughout the United States and Great Britain there is today a continuous network of syndicates and trusts, of companies and partnerships, so that every operation from the construction of a leviathan steamship to the manufacture of a needle is controlled by a corporation. When corporations thus combine it is quite natural that mechanics and laborers should follow their example. It would be as unjust to deny the workmen the right to band together, because of the abuses incident to such combinations as to withhold the same right from capitalists, because they sometimes unwarrantably seek to crush or absorb weaker rivals.

God forbid that the prerogatives which I am maintaining for the working classes should be construed as implying the slightest invasion of the rights and autonomy of employers. There should not, and need not, be any conflict between capital and labor, since both are necessary for the public good, and the one depends on the co-operation of the other. A contest between the employer and the employed is as unreasonable and as hurtful to the social body as a war between the head and hands would be to the physical body.

Whoever strives to improve the friendly relations between the proprietors and labor unions, by suggesting the most effective means of diminishing and even removing the causes of discontent, is a benefactor to the community. With this sole end in view I venture to touch this most delicate subject, and if these lines contribute to some small measure to strengthen the bond of union between the enterprising men of capital and the sons of toil, I shall be amply rewarded.

But if labor organizations have rights to be vindicated and grievances to be redressed, it is manifest that they have also sacred obligations to be fulfilled and dangers to guard against. As these societies are composed of members very

formidable in numbers, varied in character, temperament and nationality, they are, in the nature of things, more unwieldy, more difficult to manage, more liable to disintegration than corporations of capitalists and they have need of leaders possessed of great firmness, tact and superior executive ability, who will honestly aim at consulting the welfare of the society they represent, without infringing on the rights of their employers. They should exercise unceasing vigilance in securing their body from the control of designing demagogues, who would make it subservient to their own selfish ends, or convert it into a political engine.

We must guard against any word or act that is contrary to the law. Every American citizen has the right to be protected in his efforts to earn an honest livelihood. No man or combination of men should have the power to prevent him from following his vocation even by intimidation, for he may have not only himself but a wife and children for whom to provide. It is my opinion that the honest laborer who is willing to do work which is proper and in no way conflicts with the interests of the community, should be given the opportunity to perform it, and to have the same protection from the authorities which is extended to any peaceful citizen, no matter how powerful or influential may be the person or society which opposes him.

I take for granted that all unions and other societies of American laboring men are disposed to array themselves on the side of peace and order and are as strongly opposed to violations of the law as other citizens. Hence they should exert their influence to see that the laws are upheld if they would maintain the respect with which they are regarded by their fellows. It is not only a question of patriotism, but of self-interest which deeply concerns them.

I am persuaded that the system of boycotting by which members of labor unions are instructed not to patronize certain obnoxious business houses, is not only disapproved by an impartial public sentiment, but that it does not commend itself to the more thoughtful and conservative portion of the guilds themselves. Every man is free indeed to select the establishment with which he wishes to deal, and in purchasing from one in preference to another he is not violating

justice. But the case is altered when by a mandate of the society he is debarred from buying from a particular firm. Such a prohibition assails the liberty of the purchaser, and the rights of the seller, and is an unwarrantable invasion of the commercial privilege guaranteed by the government to business concerns. If such a social ostracism were generally in vogue, a process of retaliation would naturally follow, the current of mercantile intercourse would be checked, every center of population would be divided into hostile camps, and the good footing which ought to prevail in every community would be seriously impaired. "Live and let live" is a wise maxim, dictated alike by the law of trade and by Christian charity.

Experience has shown that strikes are a drastic, and at best a very questionable remedy for the redress of the laborers' grievances. They paralyze industry, they often foment fierce passions, and lead to a destruction of property; and above all they result in inflicting grievous injury on the laborer himself by keeping him in enforced idleness, during which time his mind is clouded by discontent while brooding over his situation and his family not infrequently suffer from the want of the necessities of life. The loss inflicted by strikes on the employers is not much more than half as great as that which is sustained by the employed, who can much less afford to bear it. It would be a vast stride in the interests of peace, and of the laboring classes, if the policy of arbitration which is now gaining favor for the settlement of international quarrels, were also availed of for the adjustment of disputes between capital and labor. Many blessings would result from the adoption of this method; for, while strikes, as the name implies, are aggressive and destructive, arbitration is conciliatory and constructive. The result in the former case is determined by the weight of the purse, in the later by the weight of the argument.—*Putnam's Monthly*.

#### BRICK MANUFACTURERS UNABLE TO SEND OUT THEIR PRODUCT

Cherryvale, Kansas, Sept. 27.—Shippers here are beginning to be alarmed at the prospects of a repetition of the car famine which for a time last winter practically paralyzed the brick making industry here. Since September 1, the Santa Fe has furnished very few cars to the brickyards here and the Frisco has done but little better.

While the conditions affect all shippers the brick makers suffer most as they ship entirely in carload lots. Thus far they have not been seriously inconvenienced as the storage capacity at the brick yards is not yet exhausted. As soon as they lack capacity to store their surplus the brick plants will have to shut down as they did last winter.

The Brick Manufacturers' association will probably take the matter up with the state board of railroad commissioners, as they did last winter, unless conditions improve within a few days. They have plenty of orders for brick but can not get the cars in which to ship them. As a result of the complaint filed with the state board last winter the brick manufacturers secured the adoption of a system of pro rating cars among shippers during the famine, but the system does not seem to be in operation now.

#### TO FIND THE FIRING HEAT OF A CLAY

Whenever new beds of clay are being tested, or whenever a fireman enters upon a new situation, it is necessary to ascertain the correct temperature at which the goods shall be fired. In most cases this is a matter of guess-work, of tradition, or of rule of thumb, but there is a proper method of finding this temperature.

According to the directors of the Clay Industry Testing Station in Berlin, the simplest and most accurate method of finding the finishing temperature of kilns for any particular clay is to determine the percentage of water absorbed by the clay after it has been heated to various temperatures, that at which the porosity or absorption becomes constant being the lowest temperature at which the firing should take place.

Thus, if a small brick or tile made from the clay is found to absorb 15 per cent of water when fired at Cone 022, and only 12 per cent at Cone 020, and if no matter how much hotter it is made, the absorption never sinks below 10 per cent without the clay losing its shape, it is clear that for all practical purposes the best finishing heat is Cone 020.

At the testing station just referred to, this method of investigation has been used with great success in ascertaining the temperature to which clays from various sources have been fired in course of manufacture. In this case the percentage of water absorbed by the manufactured article is carefully ascertained, and samples of the raw clay from which it was made are heated to various temperatures, and the water absorption in each case ascertained. If the amount of raw clay available is extremely small one piece may be heated to a low temperature, its power of absorption measured, the piece dried and again heated (this time to a slightly higher temperature), and the absorption again tested, the operation of heating to a gradually increasing temperature and testing for the amount of water which can be absorbed being repeated until the clay attains the same power of absorption as the manufactured article. The temperature to which it has been heated to give this result must be the same in both cases, and in this way the original firing heat of the manufactured article may be obtained with a fair degree of accuracy.

As the repeated heating and soaking affects the clay somewhat, it is better to make a second trial by heating the clay at once to the correct temperature, as found by the previous trials, and to again test its capacity for absorbing water. Thus, if the piece which had been repeatedly heated and soaked showed a power of absorption equal to the manufactured article after it had been heated to Cone 08, a second piece of raw clay should be heated to Cone 010 (that is, 40 deg. lower), and its absorption determined from that temperature onwards, so as to eliminate the injurious effects of the heatings and soakings below this temperature.

When the clay is found to have a smaller power of absorption than the manufactured article, it is a sign that it has been slightly overheated. Thus, a tile having an absorption of 5 per cent at Cone 09, the clay from which it was made would, if heated to Cone 010, have an absorption of, say 6 per cent, and at Cone 08 of say 4 per cent. This would indicate that the original tile had been fired at Cone 09, because its power of absorption is intermediate between the other figures given.

# REPORT OF UNITED STATES GEOLOGICAL SURVEY ON EFFECTS OF THE SAN FRANCISCO EARTHQUAKE AND FIRE ON STRUCTURAL MATERIALS

Within a few days after the San Francisco earthquake and fire of April 18, 1906, the United States Geological Survey arranged for an investigation of their effects on buildings and materials of construction, and the results of that investigation have just been published by the Survey as Bulletin No. 324.

The report comprises four papers: The first, by Prof. G. K. Gilbert, geologist of the Survey and member of the State Commission for the investigation of the earthquake, discusses the shock as a natural phenomenon, especially those features of it which would contribute to an understanding of the three following papers. These treat the subject from the standpoint of the engineer, and describe the effects of the shock and the fire on the various structures and structural materials.

Of the engineers reporting on the subject, Mr. Richard L. Humphrey was sent to San Francisco as Secretary of the National Advisory Board on Fuels and Structural Materials, and as a representative of the Geological Survey, in which for the last two years he has had charge of the structural materials laboratories. Mr. Humphrey's investigation began early in May, lasted six weeks, and covered the entire territory affected. Captain John Stephen Sewell, of the Corps of Engineers, United States Army, was sent to the scene of the disaster by the War Department under order of April 23, to make an investigation similar to that undertaken by Mr. Humphrey. Before going to San Francisco he had made a careful study of the effects of fire on buildings and materials, especially as indicated by the results of the Baltimore fire of 1901. Prof. Frank Soule, dean of the college of civil engineering of the University of California, who prepared the final paper, had not only had wide experience with his subject, but had the advantage of being thoroughly familiar with conditions in San Francisco prior to the earthquake and of being present during and after its occurrence.

The investigations of the three engineers were conducted independently and their papers were written without collaboration, but the opinions expressed are strikingly accordant in their more important features. The report is profusely illustrated, and a list of other important papers on the same subject which have appeared in technical journals and the proceedings of technical societies during the last year is appended to it. Bulletin No. 324 is now ready for distribution, and copies may be obtained without charge by applying to the Director of the Survey at Washington, D. C.

## FIRE BRICK FROM LOCK HAVEN TO JAPAN

A shipment of six carloads of fire brick was made from the works of the Lock Haven, Pa., Fire Brick Company last week, their destination being Japan. They were what is known to the trade as "shape" brick, being manufactured for a special purpose. The brick are packed in barrels and crates and sawdust placed about them so that they may not be damaged in transit by rail or steamship on their long journey to foreign consignees.

# IMPORTANT CHANGES AT THE NEW JERSEY SCIENTIFIC SCHOOL

Some important changes have become effective with the beginning of the new college year at the New Jersey State Scientific School; chief among these is the new curriculum, which became operative. This new curriculum is the result of a year's patient study of the various courses offered at the college, and other sister institutions, by a committee of the faculty.

The more important of the changes are an increase in the proportion of hours devoted to the technical subjects and the introduction of two new courses of study; namely, a General Science Course and a Mechanical Engineering Course. The following is a brief outline of the revised four-year course in Clay-Working and Ceramics which is now offered:

- Mathematics—Algebra, trigonometry, analytic, calculus.
- Modern Languages—French and German.
- English—English literature, essay writing, declamation.
- Chemistry—General, experimental, qualitative and quantitative analysis with especial reference to the silicates.
- Physics.
- Ceramics—Properties and uses of clays, winning and preparation, the manufacture of bodies, glazes, driers, kilns, ceramic calculations.
- Elementary mechanism.
- Elements of electrical engineering.
- Thermodynamics—Steam engineering.
- Draughting.
- Surveying—Summer field work.
- Geology.
- Mineralogy and crystallography.
- History.
- Political science.
- International law or ethics.
- Military science.
- Military drill.
- Laboratory practice with the chemistry and the ceramics.
- The revised two-year course, briefly outlined, is:
- Chemistry—General, experimental, qualitative and quantitative analysis with particular reference to the silicates.
- Physics.
- Ceramics—Properties and uses of clays, winning and preparation, manufacture of bodies, glazes, driers, kilns, ceramic calculations.
- Geology.
- Elements of mechanism.
- Draughting.
- Students entering with practical experience in clay-working are not required to take military drill, military science, essay writing nor elocution. All others must do so.
- Mr. George Bergen Ford, graduate of the Department of Clay-Working and Ceramics at the New Jersey State College, has resigned his place as ceramist at the South Amboy Terra Cotta Co., to accept a similar position with the Winkle Terra Cotta Co., of St. Louis, Mo. Mr. Robt. W. Cobb, a classmate of Mr. Ford's at the New Jersey School, has followed in Mr. Ford's place at South Amboy. Mr. Cobb was formerly ceramist for the Standard Terra Cotta Co., of Perth Amboy, and more recently has been connected with the New York office of Sayre & Fisher Co.
- Mr. Walter H. Wilson, of the class of 1907, of the Department of Clay-Working and Ceramics, has been employed by the American Clay Products Co., of Forty Fort, Pa., as ceramist.
- Plans have been accepted and ground will soon be broken for an engineering building to cost \$60,000. This will furnish accommodations for the departments of civil engineering, mechanical engineering and electrical engineering.

### THE INFLUENCE OF GRINDING ON STONY CLAYS

It has been known for some time that the grinding of a stony clay could under some circumstances so influence its composition that such a clay would no longer fall to pieces a short time after it had been fired, but although Mr. E. Cramer by experimental work showed that it was useless to grind the stone mixed with the clay to particles smaller than one-twentieth of an inch in diameter, no really systematic work of value was done before Herr de Sharengrad published the result of his work, which is of considerable interest.



A BEAUTIFULLY TILED DINING ROOM

The clay used in this case was of a particularly stony nature, being part of that great mass of boulder clay which spreads over large tracts of Central Europe, and of which brick can only be made with much difficulty, because the stone, being converted into lime in the kiln, absorbs water and carbonic acid from the atmosphere when the brick are stored, and by its expansion causes them to fall to pieces.

Herr de Sharengrad's experiments consisted chiefly in separating some of this stone from the clay, and, after washing it, grinding it up and separating it by means of sieves into particles of 1 50th, 1 25th, 1 12th, and 1 6th of an inch in diameter.

Particles of stone of each size were then mixed with the clean clay in the proportion of 2, 5, and 10 per cent respectively, and bricks made from these different mixtures.

In this way twelve different kinds of brick were obtained, and eight brick were made of each kind. On coming from the kiln half the brick were at once placed into cold water for ten minutes, so as to see the effect of dipping; the remaining bricks were placed some in the open air, some in the office.

After a month it was found that the clay containing 2 and 5 per cent. of stone ground to 1 50th of an inch diameter still remained good, though the brick containing 10 per cent of stone of this fineness had begun to split, less than

a fortnight, in spite of their being kept in the office and not exposed to the weather.

The clay containing stone 1 25th of an inch diameter split up when more than 2 per cent of stony matter was present, the time required for the destruction to take place varying from a week to a fortnight.

The same proved true of good brick containing stone particles of 1 12th of an inch in diameter, though in some cases they took a month before any defects were noticable.

Clay containing stone particles as large as 1 6th inch showed signs of disintegration even when only two per cent of stone was present, and with larger proportions the disintegration was rapid. In the case of the 2 per cent samples the damage was not very noticeable, and in one case the brick appeared quite sound.

Taking the brick as a whole, those which were kept indoors lasted longer than those stored outside, and roughly speaking the larger the particles the greater the proportion present the more rapidly did the brick disintegrate. It was, therefore, necessary to set the mills and rolls so that particles should be reduced to not more than 1 50th of an inch diameter.

This was found to be impossible in actual practice, as, no matter how carefully the machines were set, the natural movement as well as wear and tear allowed a considerable number of pieces of stone measuring 1 6th of an inch in one direction at least to pass into the mixing plant. Another "cure" was therefore sought.



A TILED VESTIBULE

The custom in burning had been to finish a firing as soon as the kiln had reached a definite temperature, but a microscopic examination of the clay showed that the stone remained free and quite uncombined with the clay. It was, therefore, sought to bring about a chemical combination by means of greater heat and a longer time of exposure in the kiln. Originally the kiln was kept for eight hours in full fire, and finished at Seger cone 08—a temperature sufficiently high to convert the stone into lime, but not to bring about any combination with the clay.

After numerous trials Herr de Sharegrad now burns this clay for 48 hours instead of only 8 hours, with the pleasing results that the extra time the goods are exposed to the heat enables a combination to take place between the lime and the clay, and that a brick fired under these conditions not only remains free from "blowing" and disintegration, but is actually stronger, the slight vitrification which has taken place binding the particles more closely together.

Consequently, it may be argued that it is not only grinding that influences the strength of brick containing stones or lime, but that the chief point is to keep the kiln at the higher temperature for such a length of time that chemical combination between the lime and the clay may take place and a solid brick be produced.

Another and a cheaper method of preventing brick from breaking up when lime is present is to dip them in water immediately they are drawn from the kiln. All the dipped brick in the foregoing tests remained sound even when the largest particles of lime were present, and where customers will accept wet bricks this is the simplest method of procedure.

#### CERAMIC TILING AS A SANITARY WALL COVERING

By Charles James Fox, Ph. D.

This is an age of science. Scientific investigation is carried on everywhere in all departments of life. It is pursued with enthusiasm by those who have received the requisite mental training, and receives popular approval even from those who fail to comprehend its methods. The layman accepts scientific principles with absolute faith and applies them with confidence. The practical application of sanitary science, for instance, invades our private life even

the infringement of the laws of sanitation as for the violation of the ordinary principles of construction. The present day popularity of tiling as floor and wall covering is due to its absolute cleanliness, even more than to its attractive appearance. The tiled wall is proof against moisture, dampness, fire, vermin and germs. Its utility, beauty and durability combine with its sanitary qualities to make it the most appropriate of all wall facings in many parts of the private house and of buildings in general. In bath rooms, where it is now in general use, it is not affected by the water which is inevitably splashed about or by vapors, both of which are so destructive of other less durable wall facings.



#### TOILET ROOM TILED THROUGHOUT

Its decorative qualities set off admirably the porcelain fixtures and bright metal work of the modern plumbing. The combination of decorative tile with the attractive modern plumbing fixtures, have made the modern bath room in appearance one of the most attractive rooms in the house. The beauty and durability of tile, combined with its real economy when compared with the initial cost and subsequent repainting of the hard wood panels or expensive wall paper, are making the clay tile a popular material for the wainscoting of the vestibule and hallways. Here, however, its sanitary qualities are more or less secondary. The European custom of tiling the wainscoting of the dining room is just beginning to find favor in this country. But here again it is the ornamental rather than the sanitary properties of the clay tile which recommend its use.

In the kitchen, however, the sanitary qualities of the tiled wall or wainscoting are once again the all important consideration. Greasy deposits and splatterings of all sorts inseparable from culinary operations, frequently soil the kitchen wainscoting. If this is made of wood or any other porous material, much of this organic matter is absorbed, and in decomposing renders the wall in a most unsanitary condition. If the wall is tiled, however, none of this dirt can be absorbed and it is removed from the surface of the tile as easily and as thoroughly as from an ordinary dinner plate. Except in the bath room, the sanitary properties of the clay tile are more important in the kitchen than in any other room of the house.



#### A NICELY TILED KITCHEN

to the extent of altering our diet, our dress, and even the construction of our homes.

In modern building operations the laws of sanitation are given almost as much consideration as the laws of physics. Municipal building ordinances provide penalties as great for

## CLAY RECORD.

LARGE EASTERN COMPANY WILL BUILD  
CLAY WORKS IN UTAH

A deal involving the manufacture and marketing of fire brick, sewer pipe, drain tile, paving brick, fireproofing, clay lumber, roofing of all kinds, and, in fact, every variety of clay product has been closed and announced at Salt Lake City, by Stowe & Palmer, real estate agents, acting for a syndicate of eastern capitalists who are now interested in several immense clay manufacturing concerns in the east.

Between two and three square miles of clay beds have either been purchased or options secured on them in the state; plans are now under way for the erection here of a \$300,000 manufacturing plant, and an eighteen-acre site has been secured within the city limits of Salt Lake for the factory—this, in brief, is the deal.

Stowe & Palmer have been at work for months securing options and purchasing outright the clay beds. The clay from these beds has been given every known expert test to determine its quality and variety. The result of these tests more than anything else is what has brought about the successful closing of the deal. The Salt Lake and Utah market for clay products of every kind is recognized as one of the finest in the entire west, and this was the original incentive for the investigation of the state's clay beds and for the consummation of the deal.

The largest and most important bed of clay which the easterners have purchased is a 640-acre tract near Fairfield on the Sen Pedro and known as the Fairfield beds. The greater part of the tract is plastic clay of the finest kind, its quality being equal to that of which standard fire brick are made. From the plastic beds of the Fairfield tract can be made, according to the report submitted to the easterners by experts last week, as fine fire brick as are manufactured in the United States. For the past few years the two largest fire brick manufacturing concerns in this section of Utah and one in Salt Lake City have been using clay taken from the Fairfield beds, and their products have gained a national reputation. These companies have been paying royalties on the clay.

In the past month practically every clay bed in Utah of any size or worth has been tested by the experts employed by the eastern men who will establish the manufacturing plant here. Practically every bed that showed favorably under these tests and was not being worked by competitive companies has been taken up by Stowe & Palmer for their clients, so that the known clay supply of this state which is not owned by competitive companies is now owned or under option to the eastern concern.

Stowe & Palmer stated that they were not at liberty to give the location of the plant site that has been secured here for the manufactory. It contains eighteen acres and will give room for an immense establishment, employing over 250 men when running to capacity. It is expected work will be started on the plant early next spring.

The easterners are preparing to incorporate with a capitalization of \$500,000. The bond issue will be \$300,000.

Several local men have asked for an interest in the company and it is possible that considerable local capital may be represented in the concern before the plant is finished.

The deal is of the greatest importance to Salt Lake, as the new company comes backed with plenty of money and has already put up a big sum in cash in purchasing clay beds.

BROTHERHOOD GAINED 16 OUT OF 28 OF ITS  
DEMANDS BUT HAD TO GIVE UP THE  
CLOSED SHOP

The recent adjustment of the wage scale for two years through a joint conference of domestic Pottery Manufacturers and the Brotherhood of Operative Potters was an excellent piece of work.

It was demonstrated that no general advance in wages could be granted under the peculiar condition of selling prices. Some slight advances were obtained, however, also a good deal of information as to the real cost of ware to the manufacturer. The right of owners to employ non-union men was tacitly admitted, and the term of apprentices in some instances shortened.

Both the committees had a majority of clear-headed and right-hearted men. The semi-Socialistic element found no representation in the workmen's delegates, and President Duffy, for the Brotherhood, proved again to be the fair, square gentleman that the potters have always trusted.

The agreement entered into between the two committees who had full power to act, becomes operative Oct. 1, and remains in force until Oct. 1, 1909. In brief the following propositions were accepted by the manufacturers:

Plain edge plates increased one-half cent per dozen and one-fourth cent increase on plain edge saucers, hotel fruits and ice creams and on 4, 5, 6, 7 and 8-inch edge plates of all weights.

One-fourth cent additional for all ware stamped in clay state. Kilnmen and kiln drawers shall not be required to wheel out sagger shoris.

Pit boys to receive \$2 per kiln and 25 cents per hundred for saggars cleaned for first ring, kilnmen and firm to pay even shares.

Kilnmen when required to place saggars "flat on" in the first ring of biscuits kilns to receive three-quarters of a day extra for 14' 6" diameter kilns and one day extra for 15' 6" kilns and one and one and one-fourth days for 16' 6" diameter kilns.

Kilnmen working in flint to receive 25 cents extra per kilnmen's day.

Minimum price for turning Baltimore teas and St. Dennis teas and coffees, 2½ cents per dozen for teas and 3 cents per dozen for coffees.

To place steam heat in packing sheds in winter season.

One apprentice for first journeyman handler; additional apprentice to every three journeymen handlers employed thereafter.

Manufacturers to provide shelter for returned packages, filled with straw to prevent freezing.

No work on July 4, Labor Day and Christmas.

Disputes not settled by standing committees in 90 days go to back to parties concerned.

When apprentice or dipper is put on, firm to receive to per cent of \$3.50 per day for first three years.

Apprentice dipper to receive—first six months \$1.50; second six months, \$1.75; second year, \$2.25; third year, \$2.75; and thereafter, \$3.50.

Kilndrawers not to draw kiln when heat at door is 110 degrees.

### THE GILLETT, DOORLESS, HOT AIR BLAST FURNACE FOR KILNS

The above is one of the latest improvements that is offered to the readers of *THE CLAY RECORD*. It is patented and made by A. Gillett & Co., of Alton, Ill. Mr. Gillett is a brick manufacturer of many years' standing and has had much experience in burning kilns and in kiln building.

In describing the furnace we ask you to look at the numbers on cut No. 1 which shows a section and an elevation of the front and side of the furnace.

No. 1 is the Crown block, with flues for letting air directly into combustion chamber, or bag, forming a perfect combustion and circulation of heat, burning all gases and smoke; also keeping wares from shrinking and melting around fires and driving heat to bottom kilns, burning wares more even. This is not attained by any other furnace on the market today.



GILLETT DOORLESS FIRE-BOX

No. 2 they claim is the Arch block, forming arch over arch pit, also coking table at bottom of coal box. By keeping coal hopper, No. 4, filled with coal, same will feed off of table continuously as it burns down. As coal box, No. 9, is air tight all of the gases are burned out of coal before it goes into ash pit. The ash pit being large and roomy the fires can be kept free from clinkers with very little trouble, as coking table, No. 9, holds up the fire from falling down.

Numbers 3 and 4 are blocks forming coal box and are gained and bolted together, making an indestructible box.

No. 4 is a heavy cast coal hopper, heavy ribbed and is bolted to crown block.

No. 5 forms the front of the coal hopper and is hinged at bottom. It can be thrown over when through burning, completely closing the top of the coal box, and is all that is necessary for keeping out air. This door can also be closed in drying off if necessary.

No. 6 is a door for regulating the flow of hot air. It has a handle and ratchet for setting same and can be closed tight when through burning.

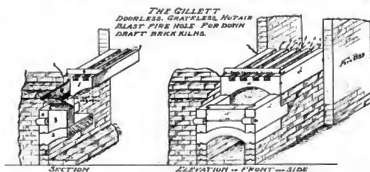
No. 8 is a fire brick made expressly for lining these furnaces. They are tongued and grooved together and cannot get out of position.

Some of the claims that are made by the firm regarding these furnaces are:

1. That they will consume all smoke and gases after the crown block is heated.
2. That they will take (by actual test) from 15 to 20 per cent less coal than other furnaces.
3. That they will not clinker, if fired as per directions, and that one man can fire 25 of them as easy as 10 of other furnaces.
4. That they are made out of a high grade Fire Clay, guaranteed for five years, excepting fire brick lining, and they will replace all parts giving out in this time if handled according to directions.
5. That they being in solid blocks are an easy furnace to set up, and can be set up by any ordinary laborer.

The directions for setting up the furnaces are very simple as will be seen by the following:

Take the blue print and look the numbers over carefully. Dip the fire brick in a thin solution of milled fire clay, and drive them down as close as possible. Place the blocks as numbered, using as little of milled fire clay as possible to set them. Leave the slotted point at front of coal box loose,



using no clay, so as to leave room for expansion. Place bolts in slots of Crown Block, No. 1, to bolt on coal hopper before setting same. In using these furnaces in new kilns, build base of kiln out from the main wall 14 inches, as per blue print. When these furnaces are placed in old kilns where walls are straight up and down they can project 14 inches out from wall, or front line of crown block, and they are so constructed that a bolt can be used to hold the coal box together. Where kilns have base no bolt is necessary.

A. Gillett & Co. will give further information to those that are interested and send testimonials from many of the users of the furnaces.

### BUILD CONCRETE ADDITION TO PEN

Owing to the inability of officials in charge of the United States penitentiary at McNeil's Island, Tacoma, Wash., to secure brick-making machinery in time to manufacture the brick needed for the construction of the addition being built to the prison, to complete it this year, it has been decided to construct the addition of reinforced concrete. This alteration in plans, which will considerably increase the cost of the addition, has been authorized by the war department and work upon the concrete portion of the structure is progressing rapidly.



### THE BEST TESTS FOR BRICK

Difficulties which have arisen in various markets, and especially in Berlin, have resulted in an elaborate investigation being made by Dr. Hans Hirsch on behalf of the German Clayworkers' Association, who have recently published the results of this investigation.

According to the textbooks, regularity of form and size, smoothness of surface, sharp, clean cut edges good ring and thin regular joints when erected are the chief characteristics of good brick, inasmuch as they indicate a carefully made product from a homogeneous material.

With improvements in other branches of constructional work these characteristics are not considered sufficient and many lots of brick generally considered to be of good quality do not by any means conform to this simple standard. This is especially the case with partially vitrified brick, many of which are of undoubted excellence, yet have a poor ring when struck.

The external appearance of the brick appeals strongly to the ordinary purchaser, but too much stress must not be laid on appearance only, or very erroneous conclusions will be reached.

#### Density and Absorption.

One of the best methods of arranging a varied assortment of brick is by means of their density and power of water absorption. To measure the water absorption the brick must be thoroughly dried at about 50 degrees Cent., weighed, and then soaked in water for some time. It is better not to completely cover the brick at first, as the air in the pores will escape more easily if a small portion is left above the water for the first portion of the soaking period. After the brick are thoroughly soaked they are taken out, wiped dry with a cloth, and weighed. They are then put again into the water, and the process of soaking, wiping and weighing repeated, and it is certain that the brick are fully saturated and can absorb no more water. It is not sufficient to soak for an hour and then wipe and weigh as some brick do not become saturated with a single soaking.

The increase in weight gives the amount of water absorbed, and this multiplied by 100 and divided by the weight of the original (dry) brick, shows the water absorbed per cent.

The density of a brick will be widely different in most cases, according as the pores are included or omitted from the measurements; but in a perfectly vitrified brick (which has no pores) the volume weight and specific gravity will be identical. In a porous brick the latter will be  $1\frac{1}{2}$  or 2 times the former, and the relation of the two often gives a valuable indication as to the extent to which the brick has been vitrified or fully burned.

The volume weight is best measured by first saturating the brick with water, then placing it in a suitable measuring vessel and find in its volume by ascertaining what amount of water is necessary to add in order to make the total volume of brick and water up to an amount which can be conveniently measured. If a vessel like that shown in Fig. 1 is employed, its capacity as to the mark o is carefully measured, and the difference between the amount of water

required to fill it up to this mark when the vessel is empty and when it has a brick inside, if added to the amount of water absorbed by the brick during saturation, gives the means of calculating the volume weight.

The specific gravity of brick is determined by grinding to powder and measuring the volume of a given weight in a similar manner to that just described, but in a smaller apparatus. Full descriptions of the methods used for determining the specific gravity of powders can be found in elementary textbooks on chemistry, and need not be repeated here.

The volume weight is the volume of unit weight of the whole material including pores; the specific gravity is the relation of weight and volume of the material itself, the pores being excluded.

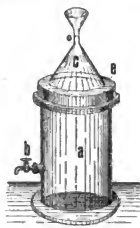


Figure 1

#### Solidity and Durability.

In actual practice more value is often placed on the strength and durability of a brick as measured in certain ways than on its porosity and density. The strength is usually determined by finding the resistance to crushing of a cube cut from the brick, and generally the test is made on (a) dry brick, (b) wet brick, and (c) brick which have been frozen and thawed 25 times before testing.

The cubes are best made by sawing the brick to the desired shape, as it is difficult with a hammer and chisel to get sufficiently flat surfaces to secure a good bedding. When necessary, a perfectly even face can be given by laying a little cement mortar on a flat sheet of glass, and bedding the brick in this. When sufficiently hardened the brick is turned over and the opposite face imbedded in cement in a similar manner. The weight of the brick is usually sufficient to produce two perfectly parallel faces if the mortar is of the correct consistency.

A sheet of wet blotting paper between the glass and mortar will enable them to part more easily, and care should be taken not to have too thick a layer of mortar on the face of the brick.

The effect of testing wet brick and comparing their strength with those tested dry is very interesting, as when a sufficiently large number of samples are examined it will be found that the presence of water seriously weakens their

resistance to crushing (sometimes by as much as 30 per cent).

It is not a little strange that no relation should exist between the density and resistance to crushing, but hitherto no such connection has been definitely found.

There is a general impression that durability can be tested by treating brick with strong salt solutions; and testing their strength after these solutions have been allowed to crystallize in the brick; but it is far better to expose the brick repeatedly to actual frost. Freezing and thawing alternately twenty-five times is now a recognized test, and the loss of resistance to crushing gives a very fair idea of the relative value of different brick from the standpoint of weather resistance.

#### Resistance to Rubbing

To test their resistance to wear and tear, the most satisfactory test at the present is made with a Böhme rubbing machine, in which a rotating plate driven at a certain fixed speed is pressed against a brick with a fixed pressure. The addition of a small quantity of emery gives the necessary gripping power, and the loss of weight gives some indication of the softness and lack of durability of the brick.

In America the brick are placed in a kind of ball mill (called a rattler), and the loss of weight after 15 minutes' treatment recorded.

#### Soluble Salts

The method used for testing for soluble salts has been given so frequently in our Journal that it is unnecessary to repeat it here.

#### Special Tests

In connection with Flettens and Lime-Sand brick, it is necessary to ascertain the degree of adhesion of mortar, as there is a tendency to weakness in this direction with

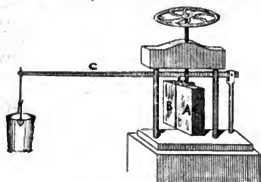


Fig. 2

some brick. This may best be tested by carefully joining two brick with a standard mortar composed of one measure of lime paste, and three measures of sand, and treating them when the joint has completely hardened in the apparatus shown in Fig. 2.

As will be seen, the brick A is held in place by the vertical screw, which can be regulated to hold it quite tightly, whilst the brick B is subjected to pressure from the lever C acting through a small pin at the centre of the top of the brick. By adding shot to the bucket at the end of the lever in a regular stream, and at a constant rate, it will be found that a certain (fairly constant) weight is required to break the joint between brick A and B, and this weight forms a

basis on which to judge brick made of different patterns or materials. The results are most conveniently expressed in pounds per square inch of jointing surface.

#### Testing for Waterproofness

Especially in the case of roofing tile, it is necessary to find the proportion of water which will leak through in a given time, and of the various tests proposed for this purpose none are entirely satisfactory. Dr. Hirsch has, therefore, devised a modification of Ludwig's test, in which a much larger supply of water can be used.

The apparatus used is shown in Fig. 3, and is quite simple. The brick or tile is painted on all except one face and a portion of the opposite one with waterproof shellac or varnish. The face, which has been partially covered, is then fitted with a glass tube 8 inches high and 1 3/4 inches in diameter.

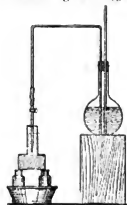


Fig. 3

and fastened with a little cement. Into this cylinder a glass tube with tap dips, and keeps the water in the cylinder at a constant level, the water absorbed by the brick or tile being automatically replaced by a fresh supply from the flask with which the glass pipe is connected. The brick or tile is supported on a couple of uprights of any convenient material.

In this way the time taken for the under surface of the test piece to become moist, dew covered, and to liberate drops of water can be readily observed, and the time to pass a pre-arranged quantity of water through the article can be readily measured, and valuable informations as to the relative waterproofness of different tile obtained.

Brick and tile from different districts very greatly in this respect, and curves showing the amount of water passing through in different periods of time are interesting and worthy of more careful study.

#### Rapidity of Drying

In these days of rapid building, the speed at which brick will dry after being saturated with water is of considerable importance. Some idea of the relative speeds of drying may be obtained by placing one of the soaked brick used for determining the water absorption on a glass or plate (so that no water will be sucked out of it, as when it is placed on wood), and weighing it at frequent intervals. The weight of the perfectly dry brick having been previously ascertained, the time taken to lose its water is readily found—about ten to fifteen days—being the average.

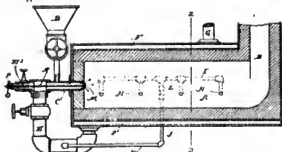
--British Clayworker.

# NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

858,640. Method of Burning Finely-Divided Fuel. George S. Welles, Chicago, Ill. Filed April 30, 1906. Serial No. 314,450.

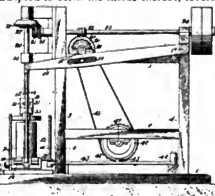
The heredescribed method of burning finely divided fuel which consists in directing such fuel relatively radially into revolving air currents.



The heredescribed method of burning finely divided fuel which consists in introducing into a combustion chamber lateral rotating previously heated air currents following the peripheral walls thereof, and introducing inwardly of said air currents and in a direction toward the same admixed finely divided fuel and a previously heated fluid vehicle therefor.

859,287. Tile-Machine. George Ferguson, Waterloo, Iowa. Filed Feb. 8, 1907. Serial No. 356,331.

In an organized tile machine, the combination of a vertically reciprocating mold for the outside of the tile, a revolving head adapted to form the inside thereof, levers and con-



necting links adapted to move the mold up and down, cranks connecting with said levers and driving mechanism substantially as described to revolve the forming-head and to slowly raise and lower said mold.

859,875. Process of Enameling Bricks, Tiles and Building Blocks. Hugo Gallinowsky, Cincinnati, Ohio, assignor to Laurence Elkus, Indianapolis, Ind. Filed June 1, 1907. Serial No. 376,849.

The process of enameling brick or other refractory material, first, by applying cement mixed with sawdust to the face of the refractory material; secondly, covering the glass of suitable size with the same mixture, applying the covered side of said glass to the treated face of the said refractory material, removing the aforesaid glass after a suitable period, substantially as described.

The process of enameling refractory material, first, by

washing the face of the refractory material to be enamelled with a mild solution of the hydrochloric acid; secondly, treating said face of said refractory material with a mixture of cement and vegetable fiber; thirdly, applying the said mixture of cement and vegetable fiber to a sheet of glass of suitable size; fourthly, applying the said covered side of said glass to the treated face of said refractory material, and finally removing said glass, substantially as rescribed.

860,120. Open-Air Brick-Drier. William Bernard, Fredericksburg, Va. Filed June 21, 1906. Serial No. 322,789.

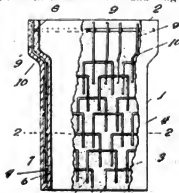
In a brick drying apparatus the combination with a series of spaced uprights and cross beams connecting the same; of a housing disposed at one end of said series, a ridge wire carried by the cross beams and extending through the housing, eave wires detachably supported by the uprights and extending through the housing, anchoring means disposed adjacent the ends of the apparatus, adjustable tensioning devices connecting the eave wires and anchoring means, and a fabric covering slidably supported upon the ridge and eave wires and movable thereon into the housing.



A brick drying apparatus comprising a stationary platform, a housing supported above the platform, series of spaced uprights at opposite sides of the platform, transversely extending cross beams supported by the uprights, a ridge wire detachably supported by the cross beams and extending into the housing, eave wires detachably supported by the uprights and extending through the housing, upper and lower side wires detachably supported by the uprights, anchoring means adjacent the ends of the platform, adjustable tensioning means connecting the anchoring means with the eave and side wires, a fabric covering slidably mounted upon the ridge and eave wires and movable into the housing, and curtains slidably mounted on the side wires and movable into the housing.

860,400. Sewer-Pipe. Edward L. Maag, Clarksburg, Ohio. Filed April 28, 1906. Serial No. 314,315.

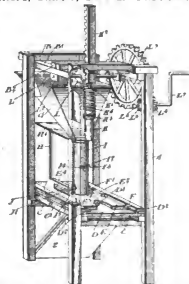
A concrete construction embodying a series of angular reinforcing ties with cross members and longitudinal mem-



bers, said ties being arranged in staggered relation and in successive layers of which the cross members of the outer layer overlap the longitudinal members of the inner layer and the longitudinal members of the outer layer overlap the cross members of the inner layer.

"A concrete construction embodying reinforcing ties of angular formation, each embodying a cross member and a longitudinal member and arranged in staggered relation and in successive layers, the outer layer being arranged in staggered relation to the inner layer and the ties of the outer layer overlapping and in contact with the ties of the inner layer.

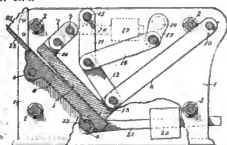
860,000. Concrete-Tile-Making Machine. William Wettlaufer, Stratford, Ontario, Canada. Filed March 26, 1907.



A tile making machine comprising a table having a hole therein, a slidable table thereon having a hole therein adapted in one position to register with the hole in the first table, a mold surrounding the hole in the slidable table and carried by said table, a hopper adapted to deliver material to the mold, a cut-off plate for the hopper carried by the slidable table, a reciprocating plunger, and means for reciprocating the plunger through the mold and registered holes to force the core from the mold.

860,783. Machine for Crushing and Pulverizing. Willard J. Bell, Newaygo, Mich., assignor to Newaygo Portland Cement Company, Newaygo, Mich.

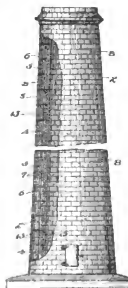
In a machine for crushing and pulverizing, in combination with a longitudinally movable jaw adapted to move in an arc of comparatively short radius at the upper end and moving in an arc of comparatively long radius at the lower end, means for moving said jaw, and a comparatively stationary jaw opposite the movable jaw and arranged in contact therewith at the lower end, and also spaced apart therefrom at the upper end.



In a machine for crushing and pulverizing, the combination of a substantially stationary jaw, a pivotal support for the upper end of the same, a yielding support for the lower end of the same, a movable jaw slidably engaging the lower end of the stationary jaw, pivoted arms of comparatively long radius supporting the lower end of the movable jaw, an arm of comparatively short radius supporting the upper end of the same, and means for oscillating the arms and movable jaw.

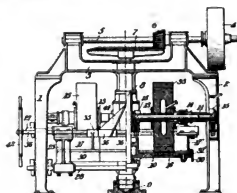
861,175. Chimney Construction. Heinrich R. Heine, Chicago, Ill., assignor to The Heine Chimney Company, a corporation of Illinois. Filed Dec. 16, 1905. Serial No. 291,959.

A smoke stack consisting of a pair of concentric, spaced-apart walls built up of brick or the like material, the bricks in said walls having vertical registering spaces filled with molded keys which support the bricks against lateral movement relative to each other, means for anchoring said concentric walls to each other, a filling between said walls made of plastic material, and means for stiffening said filling on lines parallel to said concrete walls.



A smoke stack consisting of a pair of concentric walls built up of bricks and like material having registering key-recesses, molded keys in said recesses, anchor rods having their ends embedded in said keys and key recesses and supporting said walls laterally relative to each other, a molded wall between said concentric walls, and vertical stiffening rods arranged at right angles to said anchor rods for supporting all of said walls.

860,788. Grinding-Mill. William R. Cunningham, Bucyrus, Ohio, assignor to The American Clay Machinery Co., Bucyrus, Ohio, a corporation. Filed April 23, 1907. Serial No. 369,717.



In a grinding and mixing mill, the combination with a rotatable pan, and grinding mullers beneath which said pan rotates, of a hinged door at the side of the pan and opening outwardly therefrom, said door having fixed to it a scraper, which is normally out of contact with the floor of the pan when the door is closed but which is moved towards said floor co-ordinately with the outward movement of the door

## CLAY RECORD.

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SEPTEMBER 30, 1907.

No. 6

"I like to read American advertisements. They are to themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

## CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick and Tile Association will be held at Des Moines, Iowa, January 22 and 23, 1908.

The fifth annual convention of the Canadian Clay Products Manufacturers will be held at Ottawa, Canada, November 19, 20 and 21, 1907.

The fourth annual convention of the National Association of Manufacturers of Sand-Lime Products will be held at Columbus, Ohio, December 4, 5, 6, 1907.

To much credit is more dangerous than to much money.

The more a man accomplishes the less time he has to talk about it.

How large the interest on a promissory note looks when you are paying it, and how small it looks when you are receiving it.

Subscribe today for the Clay Record. Do not wait until tomorrow: Tomorrow never comes. If you do not receive each year more benefit from the Clay Record than twice the amount of the subscription the money will cheerfully be refunded to you upon application.

There is no cure for Indigestion caused by being compelled to eat your own words.

There are two kinds of men—those whose clothes seem to have been made for them and those who seem to have been made for their clothes.

## PLANTS CAN'T KEEP PACE WITH THE DEMAND FOR BUILDING MATERIAL

There is not a brick yard in Indian Territory manufacturing first class brick that can come anywhere near keeping its orders filled. This is because there is so much building in progress in most of the towns. Kansas has supplied brick for scores of big brick buildings in Indian Territory because they could not be bought nearer. Great brick plants have been erected in all of the larger towns, but even then they can scarcely supply the local demand, much less fill orders from small towns. In Muskogee, for instance, where there are large brick plants, contractors are short of brick every day. They stand around and with a long string of teams go to the plants and vie with each other to secure enough to keep their men at work. This condition applies to common brick, pressed brick and "pavers."

## AMERICAN COMPANY WILL BRING TOTAL DOWN TO \$7,000,000—DIVIDEND DECLARED

Pittsburgh, Sept. 27—The announcement is made here that the capital stock of the American Sewer Pipe Co., has been reduced \$500,000 and that it is to be reduced further \$205,000, making the capital stock an even \$7,000,000. A dividend of 50 cents on the share has been declared, and it is intimated by those who should know that since the dissolution of the "agreement" in sewer pipe by the United States authorities the work of making sewer pipe has not been so profitable as before.

## NEW USE FOR SHALE

The knobs west of New Albany, Ind., afford an inexhaustible supply of shale that has heretofore been extensively used in the manufacture of brick of a superior quality. Within the last few weeks the Goetz Brick Company has discovered another method of utilizing the shale that may be profitable, and should it prove to be so an important industry will spring up. The company has been grinding the shale to the fineness of flour, by means of special machinery built for the purpose, and two carloads of the product have been shipped, one to Chicago and the other to Milwaukee, where it is to be used for a number of purposes.

Another use has been found for the shale that may prove profitable. It is said that it contains 17 per cent aluminum, and experiments will be made by the Goetz Brick Company to ascertain if this valuable metal can be extracted in sufficient quantities to afford a profit for working it. Should this be accomplished, another source of revenue will be afforded, and the owners of these large deposits will not be dependent entirely on the manufacture of brick to utilize them.

## OBITUARY

George Morrison, a brick contractor who formerly lived in Salt Lake City, Utah, died in San Francisco, Calif., where he had moved to regain his health. He was a native of England, born in 1862 and lived in Utah 28 years.

John F. Haas, Seneca Falls, N. Y., died at his home in Green street, aged 69 years. He was born in Germany and came to America forty-two years ago. For many years he was engaged in the manufacture of pottery at Seneca Falls.

Joseph Mayer, one of the best known potterymen in America, died at his home in Trenton, N. J., after a long illness.

## ACCIDENTS, DAMAGES AND LOSSES

W. H. Hamilton has been appointed receiver of the American Pottery Supply Co., Baltimore, Md.

At the Sutton & Suderly Brick Co. works, Cocoyans, N. Y., the clay bank slid down and ruined their steam shovel, resulting in a loss of \$3,000.

Mr. Mullaly of the brick making firm Mead & Mullaly, South Windsor, Conn., was injured while going home in his buggy by being run down by a Burnside car in Hartford Ave.

The buildings, machinery and property of the Utica (N. Y.) Pressed Brick Co., at Canastota, N. Y., were levied upon by the sheriff to satisfy a judgment of \$1,700 in favor of May S. Putnam of Utica.

The De Noyelles Brick Co. Haverstraw, N. Y., has obtained a permanent injunction against the West Shore Railway restraining the company from using a drain to the damage of the De Noyelles Co.

Geo. J. Walter, owner of the Chatsworth (Ill.) Tile Works met with a painful accident while adjusting a car door, at the works, by falling from a ladder and injuring him so he will be laid up for several weeks.

The Pacific Clay Mfg. Co., Riverside, Calif., has commenced suit against C. W. Lord, H. K. Stahl and Fred M. Baird of Corono, to secure an order rescinding the sale of a cluster of mines and asking the return of the money.

The Southern Brick Co., Little Rock, Ark. has commenced suits against Oliver LeMay, E. T. Collins, B. W. Green, R. C. Butler, C. Z. Wayman, G. W. Reaves and Lee Jaratt for promissory notes given in payment of stock.

W. F. Sadler, Jr. president of the Trenton (N. J.) Chamber of Commerce, is defendant in a suit brought by Jesse H. Smith, a retired farmer, who charges him with having sold to him stock in the Pennsylvania Clay Co., under false representation.

The McNeil Pressed Brick Co., St. Louis, Mo., works at Newbern, Ill. has filed its schedule showing assets of \$175,460 and liabilities \$65,832. In the assets are figured \$48,100 fire insurance which the unearned premiums only can be figured upon.

John Heffner has filed a \$20,000 damage suit against Van Loyd owned of the Farmersville (Ill.) Brick Works for picking up a shovel and striking him when he asked to be released from his employ. Heffner is in a critical condition in a Springfield hospital.

## FIRE! FIRE! FIRE!

The Hiram Swank's Sons brick plant in the eleventh ward, Johnstown, Pa., was destroyed by fire causing a big loss.

The Hibbard Brick Co., Kearney, Nebr., suffered a loss by fire which originated near the gasoline engine and also ignited a gasoline tank.

The plant of the Barber Asphalt Company, at Indianapolis, Indiana, was destroyed by fire causing a \$30,000 loss. This plant is covered by insurance.

Fire completely destroyed the new sheds which were 85 x 160 feet, over the new kiln of the Smith Brick Co. at 22nd & Woolworth Ave, Omaha, Nebr. The loss is covered by insurance.

The entire plant of the Orange Grove (Miss.) Brick and Tile Co., was totally destroyed by fire. The loss is estimated at \$18,000 with only \$3,500 insurance. The plant is owned by Capt. O. T. Cassibary.

The foundry of the Henry Martin Brick Machine Mfg. Co. at Lancaster, Pa. was damaged by fire to the extent of \$5,000. The foundry will be rebuilt and enlarged to take care of the increasing trade.

The Arcadia (Ind.) Brick Works was damaged by fire to the extent of \$10,000. The insurance will not cover one-fifth of the loss. The factory is owned by Byron and John Hollett and Clifford G. White all of Arcadia.

Fire caused \$50,000 loss at one of the plants of the Illinois Brick Co., which is between Oak Glen and Lansing. The blaze was caused from a spark from the engine on the Pan-handle railroad. Fully insured and will be rebuilt at once.

## LAWSUIT OVER MUNICIPAL BRICK PLANT

An interesting case has been before Judge Swan in the United States court in the suit of William Lucking, trustee for William Reich, bankrupt vs. Frank Reich, George W. Reutter, L. C. Wurzer, the City of Detroit, Mich. and Controller Doremus. Trustee Lucking is seeking to prevent the paying over to Frank Reich of \$5,000 in return for the work done in the partial construction of the municipal brick plant, alleging this money should be a part of the assets available for the creditors of William Reich. He asserts in his bill filed in the case that the contract was one really secured by William Reich, and the name of Frank Reich, his son, was used as a "mere blind" to hide from his creditors and that the senior Reich really did the work.

Attorney L. C. Wurzer is made one of the defendants on the allegation that he has a lien of \$500 on the \$5,000. for services performed in securing the passage of a bill in the last legislature that allowed the council to pay Reich for the partially completed plant, while the suit seeks to enjoin the controller from paying over the \$5,000 unless it is done under the order of the court to the estate of William Reich. The bill states that the contract was assigned to G. W. Reutter as security for loans for work on the plant.

W. G. Bush & Company, Nashville, Tenn., have recently installed a four mould Fernholtz Dry Press, made by the Fernholtz Brick Machinery Co. at St. Louis, Mo.

## CLAY RECORD.

## BURLINGTON GRANTS SPECIAL TARIFF ON BUILDING MATERIAL AT INSTANCE OF A COMMERCIAL CLUB

Splendid reductions in the rate on brick and artificial stone have been granted by the Burlington railroad upon continuous pressure from the Lincoln (Nebr.) Commercial club and Lincoln will soon have the rates it is entitled to have in this part of the state on these important commodities. Secretary Whitten of the club has made frequent requests for reduction in brick rates but General Freight Agent C. E. Spens has refused to grant them. Recently Mr. Whitten and J. H. Allen were on the point of going to Omaha to talk the matter over personally with the railroad officials when a letter arrived showing changes that had been made in the rates. The new rates granted by Mr. Spens are from one to two cents per hundred below the former rate and on the shipment of bulky articles like brick and tile this reduction will amount to a large sum in a year's time. The following table shows the former rate, the new rate and the rate from Table Rock to the brick using towns of the state:

Crete .....	3½	2½	4
Beatrice .....	4	3	3
Wymore .....	5	4	3½
Friend .....	4	3	5
Fairbury .....	6½	5	5
York .....	5	4	5
Hastings .....	7	5	...
Aurora .....	5	4	5
Kearney .....	7	6	...
Superior .....	7	5½	5
Blue Hill .....	7	5½	...
Seward .....	3½	3	5
David City .....	4½	4	...
Ord .....	8	7	...
Grand Island .....	6½	5	7½
Ravenna .....	7	6	...
Table Rock .....	5	3	...
Ashland .....	3½	3	4½
Schuyler .....	5	4	5
Sioux City .....	8½	7½	...
Omaha .....	5	3	4½
Plattsmouth .....	5	3	4½
Nebraska City .....	5	3	3
Tecumseh .....	4½	3½	2
Auburn .....	5	4	3
Falls City .....	6½	5	2½
Fremont .....	4	3½	5
Broken Bow .....	8½	7½	...

## BEST YEAR OF ITS HISTORY

The Savage Mountain Fire-Brick Co. of Frostburg, Md., reports that for the fiscal year ended August 31, it completed the best year of its history. At the annual meeting of he company the present officers and directors were elected for the ensuing year as follows: President, Charles C. Gorsuch; treasurer, John A. Caldwell; directors, Chas. C. Gorsuch, H. C. Gorsuch, Arthur Baker, George W. Albaugh and John A. Caldwell.

## PENITENTIARY BRICK PLANT

Convicts are now at work on the stockade for the brick plant at the United States penitentiary, at Leavenworth, Kansas. The plant will be one of the most modern in this section of the country and will be in operation early next year. The brick made will be used in the construction of the penitentiary and in the paving of the streets near the penitentiary. The first improvement of this kind will be the paving of Metropolitan avenue from a point west of the prison to Grant avenue.

## SCARCITY OF POTTERS SUPPLIES

Manufacturing potters in the Ohio river district anticipate additional advances in raw materials before the end of the year. The record of the present years shows that raw material have gone up by leaps and bounds, ranging from 10 to 33 1-3 per cent.

While the Cooper's Association recently increased the price of packages, it is not being paid for by the pottery manufacturers, but by those who buy goods. In all instances, package charges are added to the bill of goods.

There is a scarcity of straw in the eastern markets, and prices before the year's end are expected to be higher on contracts than ever before. A few contracts are now being made by manufacturers for \$7.50 a ton, but many manufacturers have paid from \$7.50 to \$10 a ton for straw during the past year. The fact that boats have not been running regularly has caused a slight drain in the local market, but so far no real scarcity has been felt.

Recently an attempt has been made to introduce prairie grass for packing purposes, but manufacturers and packers have not taken well to the idea. So far none is being used. However, prairie grass at times is hard to get, and the quotations often are higher than that demanded for straw. This grass formerly came from the south and even from Michigan, but freight rates are such that it makes it an expensive packing material.

The prices of clays have advanced also. While many new clay firms are starting in the business in the south, they all maintain prices and this is not working to the advantage of the manufacturing potter to any great degree.

## A NEW LINE OF DRYER CARS

The C. W. Raymond Company of Dayton, Ohio, are introducing to the claycraft, a new line of dryer cars of their own manufacture. It is well known that this company has for several years past been handling cars of other makes. They have spent nearly \$7,000.00 for new equipment to turn out this product in a strictly first class manner and with rapidity. Their equipment is modern, entirely new and ideal in ever respect.

The Raymond Company have had excellent opportunity to study the requirements of their customers with the result that they are putting out a new and attractive car and one which is up to the standard of Raymond productions. Judging from the illustrations sent us, the car certainly is a winner.

The Raymond Company have gotten out exhibit sheets giving the details of these cars, which they will be glad to send to any one interested.

## METHODS OF SELLING MACHINERY IN EGYPT

Consular Agent E. A. Powell's report on commercial conditions in Alexandria, Egypt, concludes as follows:

The only way in which any real volume of machinery business can be had in Egypt is for the manufacturers, or an agent representing several first-class houses, to establish showrooms and shops in Cairo and Alexandria. He will have to guarantee every machine he sells, erect the same, and prove by trial just what its merit is, and then sell it on terms involving part cash and part notes. The purchaser of a machine must be able in case of accident or breakdown to get repair parts or "spares" as quickly as possible, and hence it is necessary for the agent to carry a considerable supply of these in stock. It is significant, in this connection, that the number of demands for licenses to work engines for industrial purposes is rapidly increasing. No less than 609 licenses were granted last year. The total number of engines in the country is now 6,447, of which 3,497 are used for industrial and 3,950 for irrigation purposes. There are over 90 sets of the Fowler (British) make of steam plow alone in use in Egypt, averaging in price about \$15,000 per set.

I understand that the Egyptian government has purchased the pottery manufactory at Fom-el-Khalig with the intention of developing and extending the industry which has proved a success and for which there is an ample field. It is also proposed to introduce into Egypt the manufacture of glazed pipes, sanitary and other goods which are now imported from England and France at very profitable prices and which there is every reason to assume can be as well made locally under proper European supervision. The saving of freight, packing, and breakage alone would show a margin of profit of at least 20 per cent. The demand for glazed pipes and similar goods has been rapidly increasing since the completion of the Assouan dam and must still further increase as soon as the drainage works at Cairo are commenced.

A large number of the perforated bricks so generally used for building purposes in Egypt are now being imported from Cyprus. These bricks are very light and are of great use in the upper stories of houses. Up to now they have been imported from France, but it is expected that a large trade in them will shortly be developed with Limassol, for, owing to the cheap freights by sailing craft from Cyprus to Alexandria, the Cypriotes will be able to successfully compete with European manufacturers.

## BRICK CLEANED WITH COMPRESSED AIR

The work of cleaning the brick on the lower stories of the Lonsdale building at Duluth, Minn., is causing large crowds to gather at Third avenue east and Superior street to watch the process. On a hanging scaffold high above the sidewalk three men operate the compressed air hose which blows the dust and drift off the brick.

Three stories were added to the Lonsdale building this summer and the brick on the lower stories is so much darker than those on the additional stories that it was decided to clean them. The sand from the brick is blown about the streets and falls in heaps on the sidewalks.

The compressed air system of cleaning buildings has been used in the east for many years, but this is the first time that a Duluth building has been so treated.

## CLAYS IN MANCHURIA

Consul Fred D. Fisher, of Harbin, sends translations from a Russian newspaper on the deposits of clay and cement and other joining materials, which exist in large quantities in Manchuria:

Fire clay is found along the banks of many mountain streams and is very useful for the finest chinaware, being pure white. There is also a light yellowish or reddish fire clay which exists in large quantities and can be utilized for fireproof material. Fusible clay, which is soft and in an admixture with water is highly plastic and easy of dissolution, is of great value in removing grease spots, and can also be used as cloth-rolling clay. Brick clay, which is the most common variety, is used extensively for building purposes, especially in Harbin and the surrounding towns. Along the Sungari and Nonni rivers there are many deposits of sandy and blue clays, and in the sandy varieties are found gold leaves. In addition to other clay-silicic compositions deposits of lime marl are found, also rotten stone, which is valuable for the manufacture of dynamite, crystal glass, and enamel, and for polishing and cleaning.

The principal joining materials used in structural work on the local markets of Manchuria are lime, hydraulic lime, gypsum, Roman cement, and Portland cement. Limestone is found along the Ashehe and Syalin ridges and in the southern portion of the Shihote and Alinia ridges, where it is of comparatively recent origin, very grainy, and light, often containing a considerable mixture of sand and clay, and is suitable for the manufacture of hydraulic lime. Crystalline limestone, having somewhat the appearance of marble, is found in the Lao-Lin ridge. The most important of all joining materials is Portland cement, which is made by burning until the lime or the mixture of clay and lime is thoroughly haked, after which it is pulverized. Roman cement is made by burning at a low temperature. It does not slack by wetting and is easily pulverized by machinery. Although there is an abundance of lime marl in Manchuria, there is no production of such cement in the Russian Far East. Gypsum, in connection with anhydrite is found in large quantities near Fenghuancheng, Mergen, and Saimatsi, and is usually accompanied with sulphurous ore evidently of secondary formation. The gypsum near Saimatsi is of a compact, hard, grainy nature and resembles alabaster. Some of the Manchurian gypsum contains about 60 per cent of iron oxide and iron pyrites, which does not by any means decrease its value in making joining material. [Copies of the translations in question are on file in the Bureau of Manufacturers containing detailed information concerning the chemical analysis of the clay and cement referred to.]

## BLUE SPECKLED BRICK

Tests were made of yellow shale clays which underlie the great Kaolin beds at O'Quinn, Texas, for dry pressed brick. The brick have the color and appearance of cork but are nicely speckled all over from a metallic substance which melts at a low degree of heat and makes brilliant blue spots. They look very pretty, and I think they will remain so, because they are self-glazed.

Can any of your readers tell me what mineral this is? Will the blue specks injure the sale? J. C. ME LHER.



### HOW THE DOUKHOBORS MAKE BRICK

The Doukhobor brickyard at Yorkton, Sask., is on a large and elaborate scale, and under the supervision of M. W. Cazakoff, the foreman, an experienced brickmaker promises to become a most important industry. The plant cost \$50,000. A 50-horse power steam engine supplies the motive power and six men and two boys are required to operate it and the brick-making machine, one of the newest and best on the market, imported especially from the United States. The entire establishment is run by Doukhobors and unlike any other modern industry, no wages are paid. The proceeds from the sale of the brick go into the treasury of the community and the community supports the workers. This plant has a capacity of 50,000 per day, but is seldom run to the full capacity. The brick are then placed on palets and these are placed on endless drawn by excellent horses, draw the earth up an elevated wooden roadway and dump it into the machine. Here it is automatically mixed up, an automatic sprinkler supplying the water, and the brick come out six at a time. They are then placed on palets and these are placed on endless wire cables and carried into the drying shed—a huge affair 300 ft. by 50 ft, with a metallic roof—where men are stationed at different points to lift them on to the wheelbarrows and wheel them to the racks where they are placed to dry. When they have become sufficiently dry they are again placed upon the cables and taken out through the end of the shed and put into kilns and burned. They are at present burning their first kiln. Next year they propose doing away with the carts and using a steam shovel instead. They will also erect another drying shed the present one being altogether inadequate. Another innovation worth mentioning is a large 10,000 gallon cement tank, underground, to which all the rainwater off the sheds is drained, to be used in the steam engine. A large cement-block engine house is at present being built around the engine, the top story of which will be used for sleeping quarters.

At present the 28 men, 20 boys, and 3 women in the colony sleep in tents. This brickyard is a constant source of interest to visitors, who pronounce it one of the finest and most complete in Canada.

Besides the Doukhobor industry Yorkton has also a brickyard owned by C. T. Erickson. The capacity of the two combined is 75,000 brick per day thus making the town a centre for the manufacture of brick.

### SCHWARZ SYSTEM NOW CONTROLLED BY A NEW COMPANY

The Sand-Line Brick Plant Company, with offices at 20 East Forty-second Street, New York City, has been organized to take over the "Schwarz Scientific System" for the manufacture of sand-line brick plants. The president of the new company, S. F. White, M. E., is a graduate of Stevens Institute and has for a number of years been prominently identified with the sulphur industry. Plants for manufacturing sand-line bricks by "Schwarz Scientific System" have been manufactured for a number of years, and many of them are in successful operation in various parts of the country.

### POTTERY NEWS ITEMS

The Keystone Pottery Co., Crooksville, O., has been incorporated with \$30,000 capital stock. Incorporators are W. N. Burley, Z. W. Burley, J. G. Burley and Wilson Winter.

The A. E. Hull Pottery Co., Crooksville, O., increased its capital stock from \$50,000 to \$150,000, by A. E. Hull, president and W. Watts, secretary.

Plant No. 3 at Macomb, Ill., of the Western Stoneware Co., known as the Blount Pottery Co. has been started up again.

The large agreement of the United States Potters association expires Oct. 1st, and a conference has been held in New York, which lasted four days and resulted in extending the agreement for an additional two years.

The stockholders of the new pottery for Augusta, Ga., are holding important meetings and the stock is being subscribed very liberally. The plant is assured.

The American Pottery Supply Co., Baltimore, Md., will rebuild their flint mill at Deer Creek, Md., which was burned some time ago.

The Gem Clay Burning Co., Sebring, O., are hustling their plant along anxious to get into running order as orders for their product are piling up.

The Central Porcelain Works in New York Ave., Trenton, N. J. were sold by sheriff sale to Lawyer Linton Satterthwaite. The consideration was \$8,270.58.

The Topeka (Kansas) Commercial Club is in correspondence with eastern pottery manufacturers with a view of establishing a pottery there.

Robert Campbell of East Liverpool, Ohio, a practical potter of many years experience is at the head of a project to found a pottery city near Atwater, 10 miles southeast of Ravenna, Ohio.

The Warwick Pottery Co., Wheeling, W. Va., expects to have its new department at the corner of Alley 18 and the river in operation within a month.

The Harley Pottery Co., Nashville, Tenn., will soon erect a large pottery plant. It having been already decided but the location has not been absolutely agreed upon. Mr. Harley will settle the matter within a few days.

The Phoenix Pottery Co., Mannington, W. Va., has been incorporated with \$125,000. The office is to engage in the pottery industry.

A bill has been filed by Andrew Cochran to compel the Globe Pottery Co. of Bordentown, N. J., to perform an agreement alleged to have been made by which the company was to pay all debts of The Ironsides Pottery Co.

The E. E. Spencer Porcelain Co., Monmouth, Ill., has been incorporated with \$100,000 capital stock by George McPortle, Benjamin Wolf and William S. Brothers.

A company of local men will rebuild the pottery at Ft. Dodge, Iowa, that burned to the ground and was owned by the Western Stoneware Co. of Monmouth, Ill.

Carl J. McQuiken and J. J. Curry, East Liverpool, Ohio, have built a porcelain pottery works in the west end, opposite the West End Pottery Works. The plant will have a two kiln capacity at first.

Mr. Daniel Zehnder of Easton, Pa., has placed his order with the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa., for an outfit of "Martin" Brick Machinery, and the "Martin" Patented Rack Pipe Steam Brick Dryer System.

**SAND OR LIME BRICK OR BLOCK NEWS**

J. L. Weir, Lestershire, N. Y., has constructed a cement brick making plant on the south side.

The Denbigh (N. Dak.) Brick Works is now turning out an excellent product of sand-lime brick.

The big warehouse of the Menominee (Mich.) Sand-Lime Brick Co. has been completed and the works is making up stock to store.

The Enamel Concrete Brick Co., Des Moines, Ia., are contemplating spending \$25,000 for the erection of a Des Moines plant.

George E. Dungan, receiver for the Daleville (Ind.) Sand-Lime Brick Co., was ordered by Judge Leffer to dispose of the property in order to settle the accounts of the firm.

The Durico Sand Lime Brick Co., Saco, Maine, has been incorporated with \$125,000 capital stock. The officers are J. C. Smith, president; H. S. Sawyer, treasurer.

The Indianapolis (Ind.) Composite Brick Co., have completed financial arrangements for the purpose of increasing the capacity of their plant.

The Sand Lime Brick Plant Co., 20 E. 42nd St., New York, N. Y., has been organized and has taken over the business of the Schwarz Scientific System, the president of the new company is S. F. White, M. E.

The Hummelstown (Pa.) Brownstone Co., has recently completed their sand-lime brick plant. Also a large crushing and screening plant. In this plant the quarry spawls are crushed and made into brick, which are of a beautiful brown color.

The factory of the San Antonio (Texas) Brick Co., at Sherman and Pine Streets is rapidly being completed. The factory will have a capacity of 40,000 sand-lime brick daily.

J. A. Kennedy of Post Huron, and Eugene Lewis and Emil Menzer of Marquette, Mich., are organizing a \$50,000 company to make sand cement brick at West Duluth, Minn. The McIntosh Automatic System will be used.

The Independence (Ia.) Cement Tile & Block Co., has been organized with \$50,000 capital stock. Its buildings will be erected on the railway grounds near the Illinois Central depot.

The concrete Block & Brick Co., Marion, Va., will establish a plant to make cement blocks and sand brick. A. F. Redford is president; J. E. Dickensen, treasurer; R. H. Phipps, secretary, and R. Kelly, general manager.

The Intermountain Cement & Brick Co., Idaho Falls, Idaho, have a large force of men at work building their sand-lime brick factory which will utilize the sand taken from the Snake River. The equipment will be very modern.

Sidney and E. J. Grant of Brooklyn, N. Y., are building on the shore of Gravesend Bay between Bay 46th and Bay 47th streets a sand-lime brick plant 80 x 200 feet, steel construction. Same will be in operation within 60 days and will cost \$140,000.

The firm of Phillips & Bartlett, Deadwood, S. Dak., have decided to rebuild their brick manufacturing plant on White-wood creek above Deadwood. The new plant will have a much larger capacity than the one that burned down and will be built on the opposite side of the road.

## The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air regeneration.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays in waiting for the coal or other fuel to ignite as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 20% greater than that produced by coal screenings disposed between the burning bricks in a given length of time, in the ordinary continuous kiln.

### CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal fire line of the ordinary continuous kiln, the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PROBEERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



**WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.**

## MISCELLANEOUS ITEMS

Patrick J. Lynch, of Lynch Bros. Brick Co., Holyoke, Mass., has announced his candidacy as an alderman.

The Junction City (Ohio) Clay Products Co. has increased its capital stock from \$60,000 to \$80,000.

The Lombard (Ill.) Brick & Tile Co. has bought 25 acres of land at Elmhurst and will enlarge their stone quarry.

The Brainerd (Minn.) Brick Co. has its first kiln of brick ready for the market. They are very satisfactory to the owners.

The Ohio Fire Brick Co., Wellston, Ohio, has been incorporated with \$50,000 by W. B. Cherrington, B. F. Howland, J. M. Petridge, J. M. James and E. B. Bingham.

Red Wing, Minn. capitalists have secured land near Ft. Dodge, Ia., and will build a large sewer pipe works to be a rival to the new Plymouth Clay Product Co.

Lumber has arrived for the brick plant at Carlisle, Kansas, brick plant, also for the Lumberman's Portland Cement Co.'s plant.

The Western Clay Mfg. Co., Helena, Montana, is experiencing great difficulties by not being able to get coal with which to burn their wares.

The Manteno (Ill.) Brick Co., in a regular run on September 6th, turned out 105,000 brick in four hours, a ten hour run at this rate would make 262,500 brick.

The new brick plant of the Columbus (Ohio) & Hocking Coal & Iron Co., is now in operation. Fire was started under the gas producers last week.

W. C. Pooley, formerly superintendent of the Bienville (La.) Water Supply Co., has opened a plant on Wilkinson Street to manufacture brick.

The Weir City (Kan.) Brick Co. will make several new improvements in the near future. They will put in a new drying house and some more kilns.

The Isthmian Canal Commission, Washington, D. C., will receive sealed proposals until October 21st, to furnish all kinds of supplies among them being a call for fire brick.

Straight Bros., Fonda, Iowa, have taken a 60 days' option on a tract of land and if same tests satisfactorily they will build at Auburn, Iowa, a large tile plant.

The rebuilt plant of the Defiance (O.) Tile Mills Co., has commenced operations, and are now employing a good sized force.

John J. Terrall has purchased an interest in the brick and tile works, at Emmetsburg, Ia., and has moved to there from Reinbeck.

C. B. Allen, 14 Carhart Ave., Binghampton, N. Y., has bought 204 acres of land at the end of Broad Ave. and will open up a large brick yard. He will make a tour of the large cities and inspect the brick plants.

The W. A. Close Trading & Mfg. Co., Matawan, N. J., has been incorporated to manufacture brick and tile. Incorporators are W. A. Close, Chas. E. Close and Hannah T. Close, all of Matawan, N. J.

Edward Nicholson, the pioneer Stenbenville, Ohio, brick-maker has sold his west Market Street brick yard to Joseph and Harry Nicholson, who have taken charge and will continue the manufacture of brick. Mr. Nicholson will spend the winter in California.

J. H. Berry, Winstboro, Texas, and associates will erect a pressed brick plant.

The Redfield (Iowa) Brick & Tile Co. will enlarge its factory.

After a three years suspension the Lickdale (Pa.) Tile Works has resumed operations.

The McCook (Nebr.) Pressed Brick Co., have installed a 20,000 capacity Fernholtz Dry Press in their plant.

Charles Carey formerly with the Fairmount (Ind.) Tile Co., has moved to Summitville where he is the assistant manager of the plants of the National Drain Tile Co.

Jason Densmore has sold his brick business at Lebanon, N. H., to his sons, Alfred J. and George A. Densmore, who have already taken possession.

Blue prints of a proposed tile plant have been made and are now on exhibition by H. E. Baxter of the Natchez (Miss.) Freight & Credit Bureau.

The Stockport, Iowa Tile Works will be rebuilt at once, a company has been formed and work will be pushed to completion as fast as possible.

The Bessemer Limestone Co. Youngstown, Ohio, has secured contract for the sale of 4,000,000 brick which will be used in the construction of the Hudson River tunnel.

On account of a boycott declared against the Cleveland Brick Co. of Oklahoma City, Okla., the brick layers Union refuse to lay the brick of the company which has orders out for over one million brick.

A. W. Schone, Milbank, S. D., has an experienced brick maker examining the clays found near there and will endeavor to interest parties and organize a company for the manufacture of brick.

The Whitestone Silica Fire Clay Co., Jersey City, N. J., has been incorporated with \$100,000 capital stock. Incorporators are, Robert Goodbody, Haledon, N. J., G. A. Coates, 655 E. 26th St., Paterson, N. J. and Mareno Goodbody of Tenafly, N. J.

K. B. Grahn, the president of the Louisville (Ky.) Fire Brick works, who was so seriously injured by being run down by L. & N. train the latter part of August has sufficiently recovered to be able to be removed to Lake Toxaway, N. C.

Arrangements have been made for the transfer of the coal mines of the Youngstown, (O.) & Southern Co., to a company represented by E. E. Biddeson former state mine inspector. The new company will operate the mines on a large scale and build a brick and tile works to use up the fire clay which underlies the coal.

The Delaware Terra Cotta Co., of Wilmington, Del., who recently installed the "Martin" Patented Rack Steam Pipe Brick Dryer System on their plant have now placed their order with the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa., for an additional 20,000 capacity "Martin" Dryer.

Messrs. Jos. H. White & Sons, of Easton, Md., are at the present time installing a complete equipment of Martin Brick-making machinery of 20,000 daily capacity, including the "Martin" Patented Rack Steam Brick Dryer System furnished by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

Montrose, Colo., is to have a new \$25,000 pressed brick plant.

The Theriault Red Brick Co., Tilden, Wis., has filed a notice of dissolution.

J. S. Davis is interested in the establishing of a brick plant at Winsborne, Va.

F. R. Cooper, Clinton, N. C., is interested in the establishing of a brick plant that will have a daily capacity of 20,000 brick.

The Nicholson Brick Co., Steubenville, Ohio, has been incorporated with \$35,000 capital stock by Geo. W. McCook, P. McFadden, Harry Nicholson, H. Brister and J. B. Nicholson.

The Latrobe (Pa.) Brick Co., is now enjoying a season of unprecedented prosperity, the company has just secured a contract for 1,500,000 brick for the St. Joseph Academy at Greensburg.

The Alexis (Ill.) Brick & Tile Works has been sold to a party of men from Little Rock who expect to put the plant in first class condition and operate it at its fullest capacity.

Mr. Wm. Kelley of Philadelphia, Pa., is putting in an equipment of "Martin" Improved Style "A" Machinery on his Frankford yard, installed by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

The Independent Press Brick & Tile Co., Carrollton, Texas, will erect a plant costing \$95,000 and making 100,000 brick daily plans are now made. The president of the company is W. H. Moser, vice-president, Geo. B. Dobson, Galveston, secretary and treasurer, Joseph F. Kehoe.

Bernard O. Mecklenberg has bought 1,500,000 brick from the Kaysville (Utah) Brick Company for use in the buildings whose erection he is supervising.

Fine beds of fire brick clay have been discovered within seven miles of Nooksack, Wash., and an effort is being made by local parties to establish a modern plant for the manufacture of both brick and tile.

L. E. Bennett, of Millsap, Texas, has had samples of brick made from Brownwood shale which have proved to be very fine and he will organize a company to build a plant that will make both paving and building brick.

Smith & Peacock of Austin, Texas are putting in the side track and machinery for the manufacture of pressed brick at a point five miles north of Milano on the G. C. & Santa Fe Ry.

The Gifford (Mo.) Brick & Tile Co., has been incorporated with \$8,000 capital stock by J. G. Magers, H. D. Robinson, H. C. Surbeck, Thomas Miller, James Neet and others.

It is reported that several parties have secured options on 20 acres of land from Henry Hershey and Franklin Sprengle near Spring Grove, Pa., for the purpose of erecting a large brick making plant.

The Fitchburg Brick Co., Fitchburg, Mass., have just installed one of the latest "Martin" Style "P" Compound Disintegrators on their yard, this Disintegrator being the best and most modern of any machine of its kind on the market, and which is built by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

## **The GILLETT DOORLESS Hot Air FIREBOX For Blast Kilns**

Patent No. 792,769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog, and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

**A. GILLETT & CO.,**  
Factory, St. Louis, Mo. **ALEDO, ILL.**

## **DIRECT HEAT**

# **DRYERS**

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**  
62-64 William St. **NEW YORK CITY**

**DUMP CARS FOR SALE**

A few good "Male Line" Dump Cars. Will be put in A-1 condition. Write for description. Detroit Car Building and Equipment Co. Detroit, Mich.

**BRICK AND TILE MACHINERY AT SACRIFICE**

Where a country is tiled, factories are offered complete or in part. Cheap. Have several Brewer Mills for sale, and others. Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write  
Brick and Tile Machinery  
Secor, Ill.

**FOR SALE**

One Quincy Clay Gatherer and Flow. Brand new, in use only two weeks. Address:  
Elk City Brick Co.  
Elk City, Kansas.

**FOR SALE**

One power Press, in number one condition, used only but a short time, capacity 5000 per day. Ask for full particulars.  
American Examined Brick & Tile Co.  
I Madison Ave. New York

**A SOUND PROPOSITION FOR N. W. ALBERTA, CANADA**

WANTED—Manager and Superintendent who can introduce capital to create a complete brick making plant on my clay field of 60 acres, proved at 40 feet and analyzed by The Henry, Martin & Smith Machine Mfg. Co. Pa. (U. S. A.), who recommended using the following outfit: Martin Slevin Brick Contractors, and Slevin "A" Brick Machine for Moulding, and the Martin Steam Brick Dryer.

The situation of the field is close to the railway siding of Claymore on the C. N. R., 6 miles from Vermilion City, the bulkhead of the famous Saskatchewan Valley, and the Vermilion District, where bricks are now selling for 750 per thousand and great demand at that.

ALEXANDER FASON  
Planter Builder and Contractor  
Vermilion.

N. W. Canada Alberta

**FOR SALE CHEAP**

Two American Clay Machinery Company No. 23 combined brick machines, with register to make machine Bri-clava. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.  
GREAT EASTERN CLAY CO.  
25 Cortland St., New York.

**50 PERCENT SAVED**

Fifty percent saved on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference with work. Terms either royalty or cash.  
H. H. WALKER  
131 Lander St., Newburgh N. Y.

**WANTED**

Superintendents, Managers, Experts also office and Salermans with brick, tile pipe or building material experience. Write.

**HARTFORD**

315 Broadway, New York City or  
1010 Hartford Bldg., Chicago, Ill.

**FOR SALE**

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant, write to  
LUCK BOB 29 CARE OF CLAY RECORD  
Chicago, Illinois

**BRICK YARD FOR SALE**

Old established yard in good town of 4000 people, with good country surrounding 45 acres, good kilns and sheds. Good reason for selling. Call on or address  
CHARLES MCNEIL  
Maryville, Mo.

**FOR SALE CHEAP AT ONCE**

Good brick Yard in country, capacity 30000 brick daily. Can't supply the demand, for brick at \$5 to \$10 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood fire for hauling less than mill. Plenty of labor and 60,000 brick in inventory. Good reason for selling. No competition. Address  
GREGORY  
Leaville, La.

**WANTED**

Wanted Stoneware Potter—both wheel and Kiln men. Write to  
SPokane Pottery Co.  
Clayton Wash.

**WANTED**

A traveling salesman, a man who has a general knowledge of the brick business. Permanent employment.

Address B. C. care Clay Record  
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# CLAY RECORD

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## THE TESTING OF GLAZED CLAY-WARE \*

By John W. Cobb.

If a clay or mixture of clays alone or with other minerals is moulded into any desired shape, and then hardened by fire, clay-ware is obtained. If this ware is covered wholly or partly by a vitrified coating run and fixed by fire, the product is glazed clay-ware; the term therefore includes nearly all pottery and many building materials. Experience indicates that there are many degrees in the resistance offered by glazed clay-ware to destructive agencies, and it may be of interest to consider how far it is possible to determine the excellencies and deficiencies of this material before using it. The glazed brick may be taken as typical of glazed clay-ware in general, on account of its simplicity in shape and structure. It contains the elements of glazed clay-ware in their simplest combination. A normal glazed brick consists of two essential parts: first, the brick itself, tough, hard, chemically resistant, more or less porous; and second, the glaze above it, smooth, non-porous, chemically resistant, more or less bright and transparent. If the glaze is transparent, the color of the glazed brick face is often given by another coat between the clay and the glaze, but if the glaze is opaque, it carries its own color. On the advisability of knowing the resisting power of glazed brick before putting them into use little need be said. The contrast between the fine and uniform surface of a good glazed brick wall and the patchy unsightly appearance of a bad one is very striking, and is nearly always due to the quality of brick used when the wall is built.

The questions that suggest themselves are:—What are the influences tending to cause deterioration in such a piece of glazed clay-ware as a glazed brick, and how do they affect the brick, the glaze, or the glazed brick as a whole? How is the glazed brick to be tested in the office or the laboratory as to its power of resistance (paying particular attention to such tests as may be made without special laboratory appliances), and what results are to be expected from the tests applied?

In the first place, it is plain that anything which happens to destroy the complete soundness or wholeness of the brick itself, to make it crumble or crack, at any rate near the face, is bound to result in a breaking away of a portion of the glaze, and the ruin of the glazed brick in appearance and utility. Hence, little consideration is required before concluding that a degree of excellence, in the sense of complete soundness, which would be quite sufficient for an unglazed

building brick, even a high-class facing brick, may be quite inadequate for a glazed brick of which so much is demanded. This is found to be the case. The most perfect glaze cannot save the imperfect brick, for the glaze is such a delicate indicator of the perfection or imperfection of the clay it covers.

The agencies likely to do harm may be considered in the following order:—Frost, crystallisation in the brick and efflorescence from it, dirt suspended in liquid or in the atmosphere, corrosive liquid or vapor, pressure, change of temperature, scouring, and percussion.

### FROST AND CRYSTAL FORMATION.

The bad effect of frost is generally understood to be due to the force of expansion of water in freezing, to which any brick walled damp, or in a damp situation, is particularly exposed. Alternate freezings and thawings are to be resisted if harm is not to follow. With respect to crystal formation and efflorescence, the disintegrating force is the formation of crystals in the interior of the brick. The material for the formation of such crystals may have several origins.

"Mineral incrustations are mostly white or greyish, more rarely yellow or green, these latter being due to vanadium. In appearance the incrustations vary according to the solubility of the component salts, from floury or woolly powders to stactitic masses, and may result from various causes, present either in the raw clay, or introduced in the water employed in brick-making, or from pyrites in the clay or fuel, or from the ash of the latter material. Again, the infiltration of soluble substances from the mortar or combination of the alkalis in the latter, with the gypsum in the bricks, or, finally, the absorption of nitrates from the soil, and ammonia or sodium chloride (near the sea) from the air may give rise to incrustation."—(Günther, J. Chem. Soc., 1867, p. 331.)

The disruptive force of freezing water is easily understood, since the water is both expanding and crystallising; but why the formation of crystals should be in itself a disruptive force, when no expansion takes place during the crystallisation, is not very easy to see. It seems quite clear, however, that the crystallisation can do the damage even when not accompanied by an expansion. My own experiments, inducing very complete disintegration, were made mainly with sodium thiosulphate,  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ . I thought that the disintegration was due to expansion, but Dr. Dawson, of Leeds University, has made tests which show that the crystallisation of  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$  is not accompanied by expansion. The specific gravity of a solution of thiosulphate expressed by the formula,  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 7\text{H}_2\text{O}$ , at 20 deg. C., compared with water at 4 deg. C., was found to

\* Reprint from the Journal of the Society of Chemical Industry.

be 1.673; that of the solid crystals, 1.750. It seems, therefore, as if there is a force, perhaps somewhat akin to surface tension, which, by tending to secure continuity in the crystal form, enables the growing crystal to displace adjacent matter, and so to exercise a disruptive action on any material enclosing it. The results obtained leave no doubt as to the reality of the force and its effectiveness. They suggest as a general inference that much of the natural disintegration of rocks, which is put down to the expansion of water in freezing, may really be more dependent on the force of crystallisation of ice. The effect of freezing or crystal formation on the brick is to loosen its whole structure, and to make it rotten and incapable of withstanding the pressure of other forces acting upon it, be they chemical or mechanical. The crystals may effloresce on the outside of the brick where unglazed, and the brick itself is often crumbly and rotten underneath the efflorescence. The direct effect on the glaze is usually trifling, unless the crystals are formed from the decomposition of the glaze itself. This is considered below under "corrosive agents." Indirectly, however, the effect on the glaze may be great, and that on the glazed brick as a whole disastrous. The freezing water or growing crystals cannot come through the non-porous and inelastic glaze, but they often crack it, snip it, or lift it bodily from the brick it covers. Examination of a wall of bad glazed brick which has seen service will often disclose the working of this agent, especially in those courses near the ground, which are most liable to be damp. An efflorescence will sometimes be found on the face of the brick where the glaze ought to be, or underneath a lifted glaze. If for any reason the glaze and the brick are not suited to one another, and so do not cohere firmly, then the spoiling is facilitated. Underground work is most liable to show these defects. It is possible to test the liability of a brick to disintegration by the alternate freezing and thawing of water. It is, however, very much simpler to test the liability to disintegration by internal crystal formation.

#### CRYSTALLISATION TEST.

A glazed brick is placed, glazed face downwards, in hot water saturated with sodium thiosulphate, in such a way that an inch depth of brick is immersed. After soaking the brick is cooled completely in the open air, to allow crystallisation of the salt, and the soaking and cooling are repeated as often as may be necessary. A bad glazed brick begins to crack on the glazed face, and to soften and flake in its substance, after a few alternate soakings and coolings, a good one only after many, and so a decided difference is manifested between the good and the bad brick tested side by side. Probably in the vast majority of cases, if not in all, resistance to the crystallising test and to the freezing test, is the property of the same brick, so that the freezing test is not necessary if the crystallisation test is made.

Fig. 1 shows a very poor glazed brick which was submitted to me for testing. After a few alternate soakings and coolings its condition was bad, and after allowing to stand for a time, atrocious. Coming to bricks of a better class, the effect of testing is not so ruinous. As seen in Figs. 2 and 3, cracking, sometimes interestingly symmetrical, and local or general shelling away of the glaze, are the usual results. If there is a tendency to "crazing" it is displayed by the formation of a network of cracks, or a few long-line cracks. I do not think it practicable to lay down a rule that the brick should stand so many alternate soakings and coolings without injury, because the exact conditions as to temperature, cooling, etc., are not so easy to get every time. The test is essentially comparative, and I believe it to be the most useful single test in the whole range of tests. The crystallisation test gives comparative results quickly, that is in a day or so, and is useful on that account. If a brick which has been subjected to it is exposed to the weather afterwards, the dire effects of the internal crystallisation and efflorescence

are much more manifest, as can be seen in Fig. 4. This was photographed from brick tested in the same way, and to about the same phase of destruction, as those shown in Figs. 2 and 3, but afterwards exposed to the weather for three months. The destruction is complete in the case of nearly every glazed brick, excepting the salt-glazed. One result of the tests made as above, is to show that the ordinary brown salt-glazed brick (when it has been really made by applying salt vapor, and not simply dipped in a brown glaze and burnt like an ordinary glazed brick) is one of the most indestructible of brick. Another result is to show that a dense unglazed brick burnt to a light chocolate shade, may be very little affected by the crystallisation test even when exposed afterwards to the weather. No doubt this is due to the fact that, since it absorbs so little water, very little actual crystallisation can take place within it; the results justify the value placed upon such a brick for engineering purposes. It might then be thought that the less water a glazed brick could absorb the better it would resist the crystallising test, but apparently other variations are of much greater consequence in glazed brick, for in my own experiments there has been no relation found between the porosity of the glazed brick and its resistance to the crystallisation test. The determination of porosity or water absorption may be advisable for other purposes, however, and is easily made.

#### POROSITY DETERMINATION.

The brick is first dried, unless it is known to be straight from the kiln, and weighed; the drying may be done on an iron plate directly above a gas burner. It is then placed in water for twenty-four hours, with one unglazed face just above the water surface, to allow the air to come out and the water to enter with ease. For a few minutes at the end of the soaking the brick is completely immersed; then it is removed, drained for five minutes, wiped over quickly to remove externally adhering water, and weighed again. The increase in weight is a measure of the porosity.

It is interesting to note that, as a rule, bricks made by the so-called plastic process, in which the clay is mixed with an excess of water, seem to stand the crystallising test better than those made by the other processes in use, the semi-plastic and dry, in which less water is used, and greater pressure is used to thoroughly bind the clay. Such a result is not surprising if we realize the effect of adding an excess of water. In the first place, the very finely divided portion of the raw clay is thoroughly wetted. It can assume a sort of colloidal state, and so surrounds all the grosser particles with a sort of slime. On drying, the slime becomes a binding element, which has its effect in the production of a very sound brick on burning. In the second place the excess of water helps greatly to secure the absence of air in the mass of moist clay. If air is present, then on pressing the brick it is obviously liable to be spread in air films or cushions between the grains of clay, and so to prevent soundness and continuity of structure in the finished brick. Unsoundness so produced is very different from the fine and uniformly distributed porosity which results normally in drying and burning, from the shrinkage of every particle of clay in the brick on its own center. When, on subjecting to the crystallising test, a continuous air film is replaced by one of liquid in which crystallisation occurs, the disruptive effect is likely to be considerable.

#### LIABILITY TO EFFLORESCENCE; ESTIMATION OF SOLUBLE SALTS.

The crystallising test shows the extent to which a glazed brick can resist the disintegrating effect of an efflorescence, but does not show in any way the liability of a brick to efflorescence on account of the soluble salts it contains. A chemical test of the quantity of the soluble salts is necessary for that, and can be made as follows: Portions of one brick, or better, of several bricks, are broken up to about pea size,



FIG. 1.  
Bad glazed brick after crystallizing test.

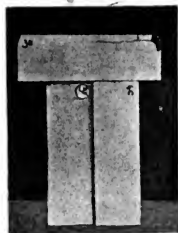


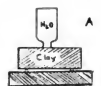
FIG. 3



FIG. 4.  
Glazed bricks after crystallizing test and three months' weathering.



FIG. 2  
After crystallizing test the good EN  
is not so good.



Soluble Salt Test

Fig 9.

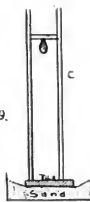
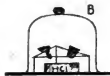


FIG. 6.  
Result of ink test. A, not impervious,  
B impervious.

### Corrosive Vapour Test.

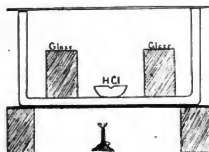


FIG. 7.

### INK TEST

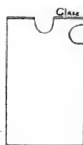


FIG. 8.  
Ink is poured into either  
of the bricks above.

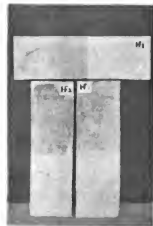


FIG. 8.  
Same sample as Fig. 7, and  
result of ink test.



shaken on a coarse sieve, 25 to the inch, and the dust which passes through rejected. (Rejecting the dust does little or no harm, and makes the task easier of execution.) Fifty grms. are then covered in a porcelain beaker or evaporating dish, with 250 c.c. of distilled water, allowed to stand some hours, preferably in a warm place, and the liquid poured off through a washed filter paper. The treatment is repeated with another 250 c.c. of water, and the two filtrates evaporated together to dryness, the evaporation being finished in a weighed platinum or porcelain dish or crucible. The residue is dried at 120 deg. C. and weighed. The percentage of soluble salts = weight of residue  $\times$  2.

The residue can be subjected to ignition or to any qualitative or quantitative tests desired. A mode of determining soluble salts, without breaking the brick, is described in the "Tonindustrie Kalender," 1907, ii. Teil, page 120. A bottle is filled with distilled water, and on the mouth of it is placed the smooth unglazed surface of the brick. The bottle and brick are then inverted together, and placed, bottle uppermost, on two glass rods over a dish. The drops of water draining through the brick are collected in the dish below. The residue left on evaporation corresponds with the soluble salts originally present in the brick.

#### DIRT IN AIR OR LIQUID.

The next harmful agent to be considered is the dirt carried by air or liquid. Dirt may discolor the brick face either from the back or from the front. Dirty liquid causes discoloration from the back by penetrating the pores of the brick, and so reaching the back of the covering glaze. If the glaze is opaque then the color of the face of the brick is naturally unaffected, but otherwise it is spoilt by unsightly staining. Discoloration from the front is one of the commonest forms of deterioration in glazed clay-ware. Dirt carried by liquid or the atmosphere is often deposited temporarily on any glazed brick face, and, unless that face is of the proper character, a portion of the dirt is liable to find there a permanent lodgment. The only way to prevent this happening is to make the glaze perfectly smooth, with nothing of the egg-shell surface about it, which may look harmless or pretty in a new glaze, and to allow no minute pinhole depressions, but to insist on a smooth glassy surface.

#### LIABILITY TO DISCOLORATION.

To test the liability to discoloration from dirty liquid, the brick may be immersed, glazed face downwards, for about an inch above the glazed surface in red ink; the stain will spread through the clay, and may or may not show through the glaze; or a hole may be made in the glazed face, or under it at the side, and red ink be poured in (see Figs. 5 and 6). This is the common method of making the well-known "ink test." Sometimes excessive porosity accelerates the discoloration, by conveying the discoloring liquid more quickly to the face. A comparison of this effective porosity may be made by placing two bricks side by side in red ink, immersing them about 1 in. deep, with the glazed face uppermost, and out of the liquid, and noting the rate at which the red stain rises on the side of each brick. In making this test, it is necessary to ensure first that the immersed faces of the brick are not sealed by accidental glazing or fire-flashing. A convenient plan is to make the ink test and the crystallising test together. This can be done by adding ink or any staining fluid to the saturated solution of sodium thiosulphate before proceeding with the crystallisation test.

The liability to take in dirt from the front, which has been alluded to as so serious a matter, is partially determined by the ink test, when made by complete immersion of the glazed face, but the best test is to rub into the glazed face damp soot or lamp-black, and then to wipe it off. The smooth bright glaze is unaffected, but not the rough dull glaze. Small depressions in the glaze, which did not appear before, become defined black points. The test shows un-

mistakably the great value in one respect of a good glazed surface; it will not hold dirt. The effect of a dirty town atmosphere is at least as bad as anything that can be done by this rubbing; the dirt can be easily removed from a smooth glaze, but not from a rough one. If a good glazed brick wall is washed occasionally, the dirt on the face should come away completely. Apart from the holding of ordinary dirt, it is very desirable in such situations as the walls of hospitals and schools that a glazed surface should not harbor bacteria. If a glaze will not stand the black carbon test without disfigurement, it will hold bacteria, and so should not be used.

#### CORROSIVE LIQUID OR VAPOR.

The action of corrosive liquid or vapor tends, in the first place, to destroy the surface film of glaze, which must therefore be of a chemically resistant composition. Whether the destruction of the surface film, if accomplished, is very harmful, or comparatively harmless, depends on the structure of the whole substance of the glaze under the surface film. If the glaze is fused throughout to a close and solid glass, it has an enormous advantage over one which consists of a somewhat spongy or honeycombed mass, wanting in solidity and continuity, covered by a very thin, continuous surface film. In the former case, the removal of the surface film simply exposes a similar film below it. In the latter case, as soon as the first thin film is gone, then the exposed surface is comparatively rough and hollow in structure; it easily corrodes further, and, being porous, easily holds dirt, and so is soon disfigured. The spongy structure is commonest in glazes containing undissolved solid particles, whether there by accident or added to secure opacity. It is therefore often noticeable in glazed brick rendered impervious by the use of an opaque glaze. The action of corrosive liquid is of fundamental importance, at times in connection with glazed clay-ware used for chemical purposes, but the tests are best made with the special conditions in view, which vary widely.

#### CORROSIVE VAPOR.

Glazed brick may be used successfully to resist highly corrosive vapors, as in lining the fume-closet of a chemical laboratory. More commonly, the surrounding atmosphere is not so corrosive, but in towns, especially industrial centers, it always contains some acid constituents, such as sulphurous and sulphuric acids, formed in the burning of coal or coke. Our testing aims at delincing with some probability what may be expected to be the result of a slightly corrosive atmosphere, acting for a long time, from the observed result of a much more corrosive atmosphere acting for a comparatively short time.

The following test is described in the "Tonindustrie Kalender" (ii. Teil, p. 167) as "Weber's Wetterbeständigkeitsprüfer (weather-resistance tester) consists of a large glass bell with a broad rim, and stands on a glass plate. Inside the bell stands a porcelain vessel containing hydrochloric acid, and a tripod of glass rods, on which the glazed pieces to be tested are laid. The pieces remain for twenty-four hours inside the bell, with about 5 mm. depth of acid in the porcelain vessel. The effect of the acid vapor on the glaze is comparable with that of a long damp winter. After twenty-four hours the test pieces are dried, without wiping, in a warm dust-free place. If the glazed surface shows a white scum it is not weather resistant. Good glazes are, after drying, quite clear, without scum." It is to the credit of glazed brick makers in this country that only very inferior grades of their wares are in the least affected by the twenty-four hours' test made in this way. Soft enamels, burnt at low temperatures, and badly constituted chemically, are attacked, and some of the so-called majolica glazes, when badly made, although these can be manufactured quite re-

sistant. The glazes on fancy tiles and "art-ware" generally are also prone to fail. Generally, however, the test is not sufficiently severe for the better qualities of glazed brick, which are burned at higher temperatures and covered with a much more resistant glaze. Moreover, liability of a glazed surface to acid attack is often local, and so it is advisable to test very much larger surfaces than can be conveniently exposed in the form of apparatus described; a few square inches is not enough. The test, therefore, takes in my own laboratory a rather different form (see Fig. 7).

#### CORROSIVE VAPOR TEST.

A glazed sink is placed on an iron plate, under which a small flame is kept burning. The brick to be tested are placed in the sink with the glazed faces upwards, and also a crucible containing strong hydrochloric acid. The upper edges of the sink are coated with vaseline, and a sheet of glass, put on the top, and gently pressed down, makes of the sink an air-tight chamber, in which the vapors of the acid may act on the glazed brick. The glazes may be tested in this chamber for weeks or months without inconvenience, the gas flame being just large enough to keep the chamber gently warmed and charged with fumes of acid. At the conclusion of the exposure the brick is dried, and any residue thereon noted. It is then further tested by rubbing any damp carbon powder, such as soot or graphite, into the face for some minutes. If the glaze is a sound one, the black powder will not hold, and can all be wiped away with ease. If, however, the surface film has been destroyed and the glaze below the film is not sound, but is bubbly or spongy, then the black powder is forced into the face and sticks there. Although the form of test just described gives results quickly in some cases, it may with high-class glazed brick take weeks or months. A more searching test is necessary for rapid work, and it may be made by substituting hydrofluoric acid for hydrochloric acid, the hydrofluoric acid being placed in a platinum, rubber, or lead holder. No glaze will stand hydrofluoric acid, so far as I know, but glazes display considerable difference after the same exposure to it, more especially when the rubbing with black carbon follows. The test is particularly useful for determining the solidity of structure of a glaze under the surface film. Fig. 8 shows glazed brick of different makes exposed together for some twelve hours to hydrofluoric acid vapor, and rubbed with carbon dust. Half the glaze on each brick was protected by coating with wax before exposing, and the difference between the exposed half and the protected half at the end of the test is a measure of the action on the glaze. There are considerable differences between brick of different makes in the way they stand this test, and so a comparison between them can be made. Generally speaking, bright transparent glazes come out considerably better than opaque enamels, because they are so much less liable to be spongy in structure. The oxide of iron in the clay may dissolve in the hydrochloric acid, forming the yellow chloride, and so cause a discoloration in the clay, which may show through the glaze. Again, in the case of certain crystalline glazes, the crystals may be completely removed by solution in hydrochloric acid, and the color and general appearance of the glaze considerably altered.

#### PRESSURE.

The next deteriorating influence to be considered is that of pressure. The lower courses of a glazed brick wall are often subjected to great pressure, and the growing use of higher buildings is increasing the average pressure to be borne. If a glazed brick were to fail completely to bear the pressure, the consequences would be serious, but even any local unsoundness, particularly near the edges of the glazed face or just underneath it, is liable, under pressure, to cause cracking or shelling away of the glaze, especially round the edges. At this point may be indicated the part played by

joints in the preservation of large glazed surfaces. The substance of the brick, and the mortar or cement between the bricks, are hard substances in a degree, but they can give way and crumble a little locally without doing much general damage. A glazed surface, however, is different. If pressure is brought to bear upon its edges it cannot crumble, it splinters or cracks. Hence in constructing a wall from units of glazed surface, it is inadvisable that any two of these units should be in actual contact, unless it is certain that they will never be pressed one against the other, which is hardly ever the case. It is one function of the mortar or cement joint to provide a cushion between the brittle edges of the inelastic glazed surfaces. The force of pressure in destroying glazed surfaces is most often seen in a wall, or more particularly in an underground passage, where very narrow joints have been used between the brick or tile. To test the liability of a glazed brick to suffer from applied pressure, one way is to determine directly the crushing strain of the brick in a mechanical testing machine. To make the crushing test satisfactorily is only possible with special equipment, and as a matter of fact, high-class glazed brick never seem to fail under pressure in the sense of crushing as a whole. A glazed brick is more likely to fail locally at an edge or corner just under the glaze, and to an extent that would be of no consequence if the brick were not glazed. Probably the best test to detect liability to such fracture is the crystallising test previously described. It will be understood from the above that the direct pressure test cannot replace the crystallising test.

#### CHANGE OF TEMPERATURE.

That change of temperature often causes partial or complete destruction of glazed clay ware, it is unnecessary to explain, but the range and rate of variation to be resisted may vary within wide limits, and the test is best made to correspond with the special requirements.

#### PERCUSSION.

Resistance to fracture by the falling of a hard substance upon the surface of clay-ware is specially important for roofing tiles, and Marten's "Fall Apparatus" is made for this purpose. (See "Tonindustrie Kalender," 1907, ii, Teil, p. 159.) In that apparatus, diagrammatically shown in Fig. 9, a pear-shaped weight is caused to fall from a measured height on the surface of the tile bedded in sand. The weight and height can be altered, and deductions made accordingly. (I have had no experience with this test.)

#### SCOURING.

The effect of scouring may be due to sand carried in liquid or blown in air, or to actual rubbing. The result is scratching of the glaze, and ultimately the wearing away of the surface film. The lower courses, especially at the corners, of brick walls built in busy places, often show the effects of knocking, rubbing, and scratching. Hardness of glaze and solidity of structure under the surface film will be understood to be necessary if scouring is to be resisted. A test which would certainly be useful, if the details were worked out, is the application of a sand-blast or a scouring of the glazed face with sand and water, followed by the rubbing in of damp carbon powder. The chief difficulty in either case is to control and standardise the amount of scouring.

Any of the tests which have been described may have to be somewhat modified to suit the sort of glazed clay-ware tested. Only such tests as are capable of fairly general application have been considered. Some of them are very simple and obvious, but, so far as I know, they have not been systematically described or collected. Moreover, it has been my desire to simplify the apparatus and manipulation described for testing as far as possible, so that means of distinguishing between good and bad might lie to hand for everybody interested in the quality of glazed clay-ware.

### BRICK VS. CEMENT: AN ANSWER TO A CEMENT MAN'S INTERVIEW

Van Meter, Ia., Sept. 27.—To the Editor: I notice in your issue of the 27th inst. an interview with a Mr. A. W. Rush, an expert cement man and consulting architect for an expanded metal concern, in which he says that cement construction is cheaper and more nearly fireproof than brick construction.

I feel that this broad statement made by Mr. Rush may be, in a measure, injurious to the largest manufacturing industry in Iowa (that of burned clay products), and as secretary of the clay working association of the state, wish to call the attention of your readers to some of the history of concrete construction that Des Moines and Iowa people may be induced to seek an unprejudiced source of information on the subject, if it be possible, and if not, to consider the reports of the frequent failure of such structures through collapse and the loss of life frequently following, as published in the press.

Judging from views contained in a book recently published in Los Angeles, "Burnt Clay Products in Fire and Earthquake," it seems that there is little question but that burned clay products are far more reliable than cement when subjected to fire or unusual strains.

Nearly all clay men are willing to give cement its due; to admit that it is a great aid to commercial development; that it has supplanted brick quite successfully in certain construction work, such as pier work (here through cheaper construction), in sidewalks, in machine foundation work and in other construction work of this class where tensile strength is not particularly essential. On the other hand, clay people and hundreds of thousands of builders are not ready to admit that cement is as good a fire resistant; not as good a moisture resistant and not as capable or safe a constructing material as clayware and structural steel. It may be that clay people are the ones who fear this form of construction the most, that is, fear that it will cause loss of life, but there are a great many people who have read of the many failures in concrete construction and who fear to enter these monolithic structures.

Bearing on the advantage of the cheapness of concrete construction, owing to ability to use cheap labor in construction, is an article in the Pittsburgh Dispatch, which reads in part as follows:

"It emphasizes the fact, so often pointed out, that reinforced concrete must be handled along scientific lines and with much care. Otherwise it is dangerous. The usual explanation of such accidents is that supports have been removed while the work is 'green.' That statement may explain but it does not excuse. Mistakes of that kind should not occur. Concrete construction of ordinary lines is tedious if the factor of safety is fully regarded, but no contractor has any right to try to make speed at the expense of security. One thing is obvious. Concrete is a new type of construction. It must be followed cautiously until the factors of safety are absolutely determined. Stresses and strains must not only be carefully computed, but ample margin must be given until experience fixes limits. Every engineer and architect is aware of the treachery of improper

mixture in concrete, and it really seems this type of construction should be put under expert official inspection. General building inspection is recognized as a necessity. Concrete demands something more than perfunctory supervision, at least until experience has reduced the frequency of such accidents as that in Philadelphia yesterday."

These comments followed the collapse of the Bridgeman building in Philadelphia. Concrete construction, carried out on so called fireproof construction lines has been attractive because of a saving in first cost. This cheaper construction is attained through the use of unskilled labor and because the rigid steel frame construction used in clayware fireproof construction is in cement or concrete construction replaced by wire cloth, small iron rods and other forms of wire.

The building of cities seems to be an oft repeated operation. That which is ample for the needs of the present decade needs to give place to the heavier demands of a comparatively few years hence, and instead of a progressive operation in building, we find that it is economy to build for present needs and demolish and rebuild as the heavier demands come. Concrete construction permits of no such idea. The materials once used are forever worthless and more difficult to remove. Who can tell what Des Moines need in twenty-five years from now? What committee of builders in public work stands ready to provide at present for the very probable demands of the next twenty years even? Of course, they expect to provide a building to last Des Moines for an indefinite period and should do so. It is, however, beyond the probable desires of the taxpayers to provide at present for the needs of the Des Moines of twenty-five years from now. A monolithic building is not the thing, particularly for the public buildings, where no man can correctly forecast the needs of the public, or at least do so and have the support of the taxpayers. Yours truly,

C. B. PLATT.

### MORE ORDERS FOR BRICK THAN CAN BE FILLED

A trip to one of the Rome, Ga., brick plants revealed signs of great prosperity. Just across the Oostanaula river is located the plant of the Trammel Brothers Brick Co. This plant has been running day and night in order to fill the orders which this concern has contracted for. Mr. Trammel states that the plants of Morrison and Trammel, the Ronte Brick Company, and the Trammel Brothers are over run with orders and it is almost a physical impossibility to fill same.

Such cases as this go to show that the building boom is on. These local brick plants are receiving orders from all sections of North Georgia and Alabama, and nearly every order received from places away from Rome is for the construction of iron furnaces, kilns and similar manufacturing concerns, which also proves that the iron industry in this section is becoming a very important factor in the commercial world.

To visit one of the local brick plants just at this season of the year gives one a very good idea of the growing condition of Rome, and impresses the fact that Rome will some day figure prominently as one of the leading cities of the South.

**SKYSCRAPER IS SAFE, IS VIEW OF EXPERT**

(Executive Officer International Society of Building Commissioners.)

By F. W. FITZPATRICK.

The president of the New York Board of Fire Underwriters' prophecy that it is only a question of time when New York's skyscraper district will be devastated by fire in the upper stories of those tall buildings is naturally attracting much attention. To a degree it is calculated to do good, but broadly considered it is harmful and of the genus purely alarmist. Of course, such a thing is possible, on the assumption that there is nothing impossible, but even with the buildings as they are, the contingency is extremely remote, and with a few additional precautions added to what have already been taken such thing is utterly impossible.

To compare New York or Chicago with Baltimore or they possibly can be. In both those cities there were but a few skyscrapers, and entirely surrounded by a most inferior class of buildings. In neither city were the skyscrapers at all comparable to those in New York, in as far as construction and fire prevention are concerned.

**MODERN STRUCTURES WELL BUILT**

In New York the tall buildings are in a reasonably well-built district, and so are those of Chicago; the general character of the older and lower ones is vastly superior to the average of what existed in either Baltimore or San Francisco, and in themselves the skyscrapers are superior, too. Their tall frames of steel, thoroughly protected with brick and tile fireproofing, offer absolutely no structural prey for flames, and the management of the buildings, the nature of their contents, as well as their general finish, are such that the probability of any extensive internal fire is indeed remote.

Add to that the fact that there are so many tall buildings together and of the same general character and you have reduced the possibility of external attack to the very minimum. It may seem paradoxical, but is a fact nevertheless that if you could have a city or an entire district of well-built buildings they would need be only of incombustible rather than absolutely fireproof construction, because you would have eliminated the danger of fire by eliminating material that would burn.

**PLEA FOR BETTER CONSTRUCTION**

Rather than generally condemning the skyscraper as a dangerous structure, Mr. Babb, the board of underwriters and the others who feel at all alarmed had better join forces with this society, the leading engineers of the country and the local building departments in urging not that skyscrapers be not built, but that they be even better devised than they are now. Many of the big structures of our important cities are well-nigh perfect as they are, but in many of them some one thing or another has been neglected that makes grave damage by fire possible, though hardly probable. The safeguards are few, inexpensive, possible to be introduced in any and every existent structure and are absolutely infallible in that they would render those tall buildings beyond any question of a doubt the safest place in which anyone could have his abode.

First and foremost, absolutely cut off all vertical open-

ings by thoroughly inclosing stairway and elevator shafts, so that each story constitutes a unit or a separate building by itself.

**WINDOW AS SOURCE OF DANGER**

Next, look to the windows. Therein lies the most imminent peril. Eighty per cent of all the damage done in buildings in which fire did not have its origin was the fault of insufficient window protection; full 50 per cent of San Francisco's loss and 44 per cent of our yearly fire losses are directly attributable to the same cause. Therefore, wherever good and sufficient window protection has not been provided in skyscrapers, the matter should be attended to at once. New window frames could easily be substituted for the old, and at no great inconvenience to the occupants of the buildings, and the cost would be the very best and most highly protective insurance the owners could indulge in. Every frame and sash should be of metal or other incombustible material, glazed with wire glass and preferably made automatically closing.

Wherever the provision has not already been made abundant local water supply should be installed, big tanks, plenty of hose and individual appliances. Then, the employees of the building should be thoroughly trained in fire drill so that each one of those buildings becomes an independent factor that relies to a degree on the city departments and water for assistance, but not for initiative, and in ninety-nine cases out of a hundred, sufficient protection.

Mr. Babb to the contrary notwithstanding, I firmly believe that the skyscraper district of New York and of Chicago, even as it is, is about as safe a place as one could find in any city, and if the owners will but take few precautions enumerated, still greater security would result.

**UNITED STATES STEEL TRUST TO  
MAKE BRICK**

Pittsburg, Oct. 10.—The United States Steel Corporation has decided to manufacture bricks for its own use in the Pittsburg mill district, and may possibly buy up all the brick-making concerns in this part of the country and enter the market as producers of fire brick also. Much consternation exists among small brick-making concerns because of a circular letter from the offices of the Carnegie Steel Co. here asking for information regarding the workings of the various plants.

Many of the brick makers are asked to submit for 20 days in succession samples of their brick as turned out daily and also supply some detailed working drawings. Each plant has also been asked to show its location with reference to the Pittsburg manufacturing district; how the plant is reached by either water or rail, and the cost of transporting material, raw and finished. The brick makers are in a quandary.

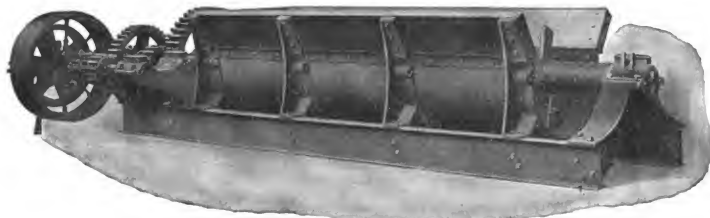
A committee has been appointed by the Carnegie Steel Co. to report on the brick situation. Thomas McDonald of Youngstown, Ohio; Homer Williams of Duquesne, Pa., and J. S. Unger of Pittsburg comprise the committee and much difficulty is experienced in getting the data, as the smaller brick makers are fearful that a move is on to force them out of business, and so will not give information.

## CLAY RECORD.

### A NEW LINE OF GRANULATORS

H. Brewer & Co., of Tecumseh, Mich., are now offering a new line of granulators consisting of four patterns, spur and bevel geared, pushing and pulling designs. They are claimed by the manufacturers to be exceptionally strong and heavy machines of most modern construction and to include a number of valuable ideas which make them especially desirable.

The shells are rolled from single sheets of 5-16 in. steel, are reinforced upon their upper edges with steel angles and supported at four points in their length by heavy cast saddles. These saddles also support the upper extensions of the shells which are made of 3-inch seasoned oak plank and serve as a beginning for the construction of the hoppers, built of plank, usually employed. The pugging knives are forged from hard high-carbon steel, have blades 10 in. long and round shanks which are mortised into the shafts. They are secured in any desired position by means of taper keys, thus making each one independently adjustable and subject to removal without disturbing any other knife and without removing the shaft from its bearings.



A CLAY GRANULATOR; MADE BY H. BREWER CO., TECUMSEH, MICH

The thrust bearings are of the Marine pattern which consists of square elevations running around the shafts at the point where they are enclosed in the bearings, with grooved boxes and caps to fit; giving much more bearing surface than is possible with collars of reasonable size and excluding all grit and foreign substances from between the surfaces of contact.

The tops and delivery ends are entirely open, but by adjusting the knives to the proper pitch it is possible to control the length of time the clay is kept in the machines and the rate of delivery, irrespective of the speed at which the machines are driven or the amount of clay there may be in the hoppers above them.

The specifications indicate that these machines weigh 18,000 pounds each. Granulating shafts 10 in. diameter. Gears  $2\frac{1}{4}$  and  $2\frac{3}{4}$  in. pitch, 6 and 8 in. face.

Further particulars may be obtained from Bulletin No. 9 issued by H. Brewer & Co., Tecumseh, Mich., which will be gladly mailed upon request if you mention the Clay Record.

### NEW MONTELLO PLAN DETAILED

After a consultation lasting two days between the directors of the Montello Brick Company, Reading, Pa., and the committee of bondholders of the Montello Brick Works, no definite action has been agreed upon, further than that the bondholders' committee will present the proposition laid down by the directors and their ideas will be ascertained.

It appears that Messrs Arthur Buck and T. Dawson Coleman, both of Lebanon, and George Brooke, of Birdsboro, bondholders as well as stockholders, who were present at the meeting agreed to the proposition submitted, but Messrs Howard L. Boas, Dr. Walter A. Rigg and Robert E. Brooke, representing the bondholders, will present the plan to the latter, and if they desire any suggestions or amendments their counsel will incorporate them in their answer. Richmond L. Jones represents the Montello Brick Company, which is not insolvent.

The plan decided upon is somewhat complicated, although it is said to promise a highly successful solution. The debts of the company amount to \$150,000. To liquidate these and to obtain money to carry on the business and start up the

brick plants on a paying basis is the principal object of the directors.

To do this the directors point out a scheme by which they propose to hold out a helping hand to the bondholders of the United States Brick Company and Montello Works. They ask that an assessment or voluntary contribution be levied upon the bondholders of these two companies, and in exchange for this issue, they will be given new stock of the original Montello Brick Company. The directors agree to take over the bond issues of the other two companies.

The bond issue of \$1,500,000 in the Montello Brick Works which, should the lease revert to the Montello Company on Nov. 1, on account of default of interest payment, would be practically worthless, assessed at 10 per cent as is proposed, would yield \$150,000. The \$400,000 bond issue of the United States Brick Company, which is in the same shape now as the Brick Works stock, would yield \$40,000. This total of \$190,000, together with the first preferred stock of the Montello Company of \$500,000, would make up the new \$690,000 preferred stock issue in the Montello Company.

The second preferred stock would represent the \$550,000 issue, which is the present Montello Company's common stock. The third preferred stock would represent the \$1,650,000 issue, represented by the notes of the directors, bonds formerly represented in the U. S. Brick Company and Brick Works and all debts. The fourth claim would be the \$400,000 issue of common stock.

Thus the proposed plan would represent a stock issue in the Montello Brick Company of \$3,305,000, made up as follows: \$600,000 first preferred; \$550,000 second preferred; \$1,650,000 third preferred, and the \$400,000 common stock; a total of \$3,305,000.

In order to pay dividends on the first three preferred stock issues \$174,000 profit a year would be needed. At 6 per cent it would require nearly \$42,000 on the first preferred issue of about \$600,000; \$33,000 interest on the second preferred stock issue of \$550,000; \$99,000 on the third preferred stock issue of \$1,650,000, making \$174,000 a year to be made up on interest to pay on the stock at 6 per cent, without allowing any payment on the \$400,000 common stock issue, which would come in last and on which the payment of interest was defaulted on Oct. 1 last.

According to the annual statement made by the directors of the brick companies in 1905, 77,000,000 brick were sold in 1906, 85,000,000 brick were sold, and in the first seven months of this year 60,000,000 brick were sold. At \$2 a thousand, the market price, this would average about \$165,000 income a year. Thus allowing credit for better management in the future the income from the plants of \$165,000 a year, it is argued, can be increased to the \$174,000 desired to meet the payment of 6 per cent on all stock issues save the \$400,000 common stock.

Under this proposition bondholders have asked for assurances of better management. It is said that the Perkioinen brick plant was bought originally by certain directors and others for \$25,000 and rented to the United States Brick Company for \$12,000 a year or at a profit to the investors of 48 per cent. The Perkioinen fire brick plant was also purchased for \$12,000 and rented to the U. S. Brick Company for \$6,000 a year, or at a profit of 50 per cent.

Under the new organization, it is said, this squandering of money will cease, and with the bondholders of the two underlying companies protected by a stock issue, the United States Company and the Montello Works can be wiped out of existence.

#### KILNMEN AT EAST LIVERPOOL MAKE DEMANDS AND WALK OUT PENDING SETTLEMENT

A majority of the potters in the East Liverpool, Ohio, district are tied up so far as the kiln department are concerned and the clay shops will be affected in the event that the dispute of the kilnmen is of any length. The kilnmen demand that individual butters be sponged before reaching their department. The proposition has been in the hands of the standing committee for some time, but no decision has been announced. A resolution passed at the last convention provided that the butters be sponged in the dipping house. A number of kilnmen, however, remained at work, refusing to walk out and abide by the decision of the local. A special meeting of the kilnmen's local was held tonight to discuss the proposition. The fact that the men quit work is asserted by some to be a violation of the agreement between the manufacturers and the brotherhood.

#### THE TWENTY-SECOND NATIONAL CONVENTION TO BE HELD AT COLUMBUS, OHIO, FEBRUARY 3-8, 1908

The statistical chart recently issued by the United States Geological Survey shows that Ohio still maintains her position as the leading State in the production of clay wares. Buckeye kilns turn out 19.26 per cent of the entire clay products of the country.

It is peculiarly fitting that we should meet in the capital city of this, the chief clayworking State of the Union. It is so centrally situated, so easily accessible to a great majority of the clayworkers of the land, that it would seem an attendance exceeding even that of the St. Louis convention, which was the best convention in point of members yet held, may be anticipated.

Hence we are pleased to announce that arrangements have been completed for a convention at Columbus the week of February 3d, at which time the Ohio School for Clayworkers will keep open house, and Prof. Orton and his assistants will not only bid all visitors a cordial welcome, but will be prepared to demonstrate the advances made along technical lines in the art of clayworking since our previous meeting there in 1899.

The brick manufacturers of Columbus and vicinity will demonstrate that the cordial invitation extended by them through Prof. Orton at our last meeting was not a mere form of words, but will individually and collectively extend a welcome so earnestly heartfelt and warm that, regardless of the temperature, the visitors will have no occasion to make a midwinter trip to the tropics, and while the entertainment afforded will be so timed and planned as not to interfere with the deliberative work of the convention, the local committee will strive strenuously to make the week one of many pleasures.

It is too early to announce railroad rates, but as Ohio and adjoining States now operate under a 2-cent law, and those coming from a distance can obtain the same low fare by using mileage books, the same relative rate that has heretofore prevailed is assured. The N. B. M. A. hotel headquarters will be at the Southern Hotel, where special rates have been arranged for.

As in former years, the American Ceramic Society will meet Monday, Tuesday and Wednesday forenoon. They will rendezvous at the Hartman Hotel, which is two blocks from the Southern.

The National Paving Brick Manufacturers will meet in a parlor of the Southern, as will also the Machinery Manufacturers' Association.

The N. B. M. A. sessions will, as heretofore, begin Wednesday afternoon at 2:00 o'clock, and ample provision will be made for an exhibition room affording adequate facilities for all who may wish to display samples of brick, models of clayworking machinery, factory supplies, trade literature, etc.

Those desiring more detailed information on any feature of the convention, or the requisite of membership, etc., are requested to communicate with the secretary at Indianapolis.

THE EXECUTIVE COMMITTEE,

WM. CONWAY, President.

THEO. A. RANDALL, Secretary.

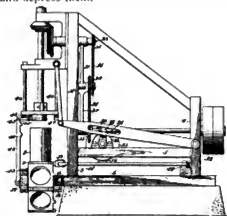
## CLAY RECORD.

## NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

850,039. Brick-Pallet. Anson J. Bentley, Niles, Ohio. Filed Aug. 29, 1906. Serial No. 334,550.

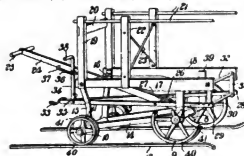
In a tile machine, the combination of a forming-head, composed of two or more differently rotating parts, a mold conforming to the exterior of the tile and concentric with said head and mechanism substantially as described to rotate said heads at differing rates of speed and simultaneously to raise and depress them.



In a tile machine, the combination with a mold for the outside of the tile, a forming-head for the interior thereof, mechanism adapted to simultaneously revolve said head and raise and lower the same, an endless carrier for the mold, comprising a series of linked plates and carrying sprockets therefor and means for advancing said carrier step by step comprising a pivoted lever provided with a pawl to engage said carrier-plates and a cam adapted to shift said lever intermittently and while the forming-head is elevated above the mold.

860,609. Brick and Tile Truck. John F. Siegel, Creston, Iowa. Filed March 5, 1907. Serial No. 360,699.

A wheeled truck including a pivoted body portion, means for raising and lowering the free end of the body portion, a draft device associated with the truck, and means carried by the elevating means and engaging the draft device for locking the body portion in adjusted position.



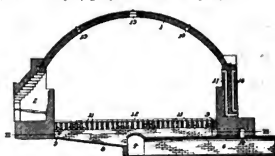
A truck having front and rear axles, a stationary frame carried by the axles, a body portion pivotally mounted on the stationary frame, converging reach bars pivotally connected with the free end of the body portion for raising and lowering the latter, the converging ends of said reach bars being secured together and extended longitudinally beyond the adjacent axle to form a foot piece and a draft device pivotally connected with the reach bars.

860,701. Refractory Lining for Retorts. Frank B. Smith and Guilford C. Glynn, Iola, Kans. Filed Nov. 23, 1906. Serial No. 344,727.

A neutral lining for highly heated surfaces, comprising an inert refractory material mixed with chromic oxid.

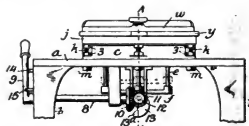
The process herein described of lining fire-clay surfaces of a fusible compound of an alkali earth capable of forming an enamel under a high heat; then applying thereto an external coating of a neutral refractory material and then burning the same to cause an adhesive affinity between the enamel and fire-clay on the one side and the enamel and external refractory material on the other side.

861,410. Burning-Kiln. Frederick A. Weigel, Johnetta, Pa. Filed July 3, 1906. Serial No. 344,591.



In a device of the character described, a suitable burning kiln; a covered passage-way extending from side to side of the kiln and communicating with an air well; a draft flue intersecting said passage-way and extending to a draft stack; a damper in said flue; a plurality of openings formed in said passage-way; a plurality of support walls extending across at right angles with the covered passage-way and between the openings formed therein; air spaces between each two walls communicating with the openings through the passage-way, the bottoms of which incline toward said passage-way; and a circular auxiliary flue extending around the kiln, communicating with each air space and draft flue, the ends of said auxiliary flue being separated by a dividing wall and having damper means for regulating the draft therethrough; as, and for, the purpose set forth.

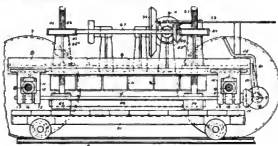
861,520. Tile-Making Machine. Samuel A. Jones, Desher, Ohio. Filed March 15, 1906. Serial No. 306,235.



In a molding machine of the character set forth, the combination with a table, of molding means mounted on the table and having actuating devices disposed at one side of the same, a pallet associated with the molding means, a spider located beneath the table and having up-standing pallet engaging pins, a shaft journaled beneath the table and extending toward the side having the actuating devices for the molding means, a cam on the inner end of the shaft that bears against the spider, a countershaft located beneath the side of the table on which the actuating devices are located and geared to the outer end of the first mentioned shaft, and an actuating device secured to the outer end of the countershaft and disposed at one side of the actuating devices.

862,259. Brick-Making-Machine. Robert E. Laughray, and George F. Laughray, Bay City, Mich. Filed July 14.

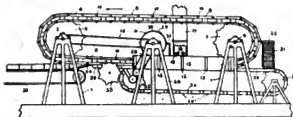
The combination with a mold, of strippers adapted to register therewith to eject the article in the mold, a stationary support for one face of the brick means for imparting vertical movement to the mold toward the members and a single means for adjusting the strippers toward the mold prior to the ejection of the molded article and for simultaneously moving the strippers and mold away from the article subsequent to its ejection from the mold.



The combination with a mold, of an ejector comprising a body, a stripper depending therefrom, and with which the mold is adapted to register, hangers depending from the body, supporting boxes on which the hangers are adapted to slide, eccentrics journaled in the hangers beneath the boxes, a stationary curved wing depending to a point beneath the eccentrics, the eccentrics adapted to engage the curved wings to raise and lower the body, means carried by the body for moving the mold and its contents toward and from the stripper and means removably located beneath the mold when in engagement with the stripper, for receiving and supporting the contents during its ejection.

862,558. Brick-Making-Machine. Ira E. Hiscock, Bay City, Mich. Filed March 12, 1907. Serial No. 361,953.

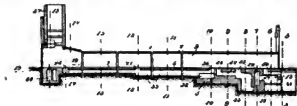
A brick-making machine comprising an endless chain of molds, a casing for confining the return section of the chain of molds, a casing in which the return section of the chain of molds is confined during a portion of its travel, means for supplying material to the molds during their progress through the casing, means for automatically supplying pallet boards to the bottom faces of successive molds prior to the filling of the molds, means for compressing the material in them olds, and means for partially disassembling the molds to release the completed brick and pallet boards, as the chain of molds progresses.



A brick-making machine comprising an endless chain of molds, a casing for confining the return section of the chain of molds during a portion of its travel, the sides of the casing being removed adjacent the discharge end of the machine, the bottom of the casing being slotted and extending from the receiving end to the discharge end of the machine, means at the discharge end of the machine for simultaneously raising and separating the endless chain of molds and a pallet board feeding chain received in the slot in the bottom of the casing and adapted to supply the respective molds with pallet boards.

861,733. Drier. Edwin A. King, Philadelphia, Pa. Filed April 4, 1907. Serial No. 360,265.

In a drier, a drying tunnel, a furnace and a series of air flues and having extensions of increased cross-section intermediate of their ends, a second series of air flues located alongside the furnace and below the smoke flues, a chamber located below said smoke flues, and a third series of air



flues leading from said chamber toward the stack end of the tunnel, said chamber adapted to connect the second and third series of flues with each other and to permit of expansion of air thereof.

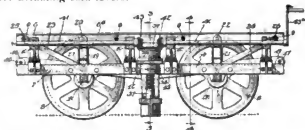
864,283. Brick and Wall Constructed Thereof. Elmer D. Andrus, South Chicago, Ill. Filed July 12, 1906. Serial No. 361,953. A wall comprising bricks arranged in transverse courses and in longitudinal alignment, each of said bricks being formed adjacent its side edges at opposite points with recesses extending from front to rear and extending to the edges thereof, and designed to register with the recesses in the longitudinally and transversely adjacent bricks, and a



reinforcing agent disposed within said recesses and comprising a filling of cement molded therewithin and metallic strengthening members embedded in said cement filling in longitudinal and transverse relation, said members overlying the respective adjacent bricks in pairs, said members comprising bands having bent ends to grip said cement filling, said bands being arranged independently between the respective pairs of several adjacent bricks.

865,299. Vehicle for Carrying Brick. John J. Gledhill, St. Louis, Mo. Filed April 5, 1906. Serial No. 360,988.

In a vehicle of the class described, the combination with a movable supporting frame, of a rigid frame, a yoke secured to said frame, rollers secured thereto, a series of levers secured to said frame and seated on said rollers, and means for actuating said levers.



In a vehicle of the class described, the combination with a rigid frame, a movable frame, a yoke mounted on said rigid frame, rollers mounted on said yoke, lifting levers pivotally secured to said frame and loosely mounted on said rollers, means for operating said lifting levers whereby the elevation of said movable frame is varied, said means comprising a screw seated in said yoke, a threaded bearing secured to said rigid frame, a crank shaft, and gearing connecting said crank shaft and screw.



## CLAY RECORD.

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## CLAY RECORD PUBLISHING COMPANY,

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GEORGE H. HARTWELL, Editor.

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Vol. XXXI.

OCTOBER 15, 1907.

No. 7

"I like to read American advertisements. They are to  
themselves literature, and I can gauge the prosperity of the  
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the  
very time that advertising should be the heaviest. Ninety-nine  
out of every hundred merchants advertise most when there is  
least need of it, instead of looking upon advertising as the pan-  
acea for their business ills.—John Wanamaker.

## CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick  
and Tile Association will be held at Des Moines, Iowa,  
January 22 and 23, 1908.

The fifth annual convention of the Canadian Clay Products  
Manufacturers will be held at Ottawa, Canada, November  
19, 20 and 21, 1907.

The fourth annual convention of the National Association  
of Manufacturers of Sand-Lime Products will be held at  
Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic So-  
ciety will be held at Columbus, Ohio, February 3d and  
4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving  
Brick Manufacturers' Association will be held at Columbus,  
Ohio, February 3d and 4th 1908. Headquarters at the  
Southern Hotel.

The twenty-second annual convention of the National Brick  
Manufacturers' Association will be held at Columbus, Ohio,  
February 3d to 8th 1908. Headquarters at the Southern  
Hotel.

Are you a subscriber to the Clay Record? If so, thanks!  
If not, get in line at once. The Clay Record is printed twice  
a month and gives to you the news of the clay world before  
it is stale; often two to six weeks ahead of the other journals.  
Subscribe for it; advertise in it!

Confidence is great stuff.

Lots of men and things seem easy until you try to do them.

Better a word in season than an hour's lecture out of  
season.

Make one good move each day. For this one subscribe  
for the Clay Record.

A man is foolish to go around looking for trouble unless  
he is strenuous enough to take a fall out of it.

PENNSYLVANIA FIRE CLAY INTERESTS  
MERGE

Papers have been filed in the State Department at Har-  
risburg, Pa., for a consolidation of fireclay interests in the  
upper Juniata Valley. The new company will be known  
as the Alexandria Fireclay Company and will comprise  
properties at Petersburg and Alexandria, Huntingdon  
County and Lily, Cambria County. There are also several  
companies under development in other counties. S. H.  
Spyker, of Huntingdon, and John Phillips and J. N. Hat-  
field, of Alexandria, are interested. The plants will be  
enlarged and a large scheme of development undertaken.

## IOWA BRICK MEN ASK MORE SHOW

At the meeting of the Greater Des Moines committee  
Freight Commissioner Wylie called attention to the im-  
portance of the docket of the board of railroad commis-  
sioners hearing. Among other things that will be considered  
are rates on brick and analogous commodities. The rate  
from East St. Louis and Galesburg, Ill., to Omaha is 7½  
cents per 100 pounds. The distance from East St. Louis  
to Omaha is 411 miles and the Iowa distance schedule for  
that distance is 17 cents per 100 pounds. The manufactur-  
ers of Iowa believe that in view of the interstate rates the  
intrastate rates should be so adjusted as to give Iowa pro-  
ducers more of an even show in selling to Iowa brick users  
versus producers outside the state.

Commissioner Wylie is now also engaged in preparing a  
paper to be read before the meeting of the National Indus-  
trial Traffic league to be held in Washington, D. C. The  
league was organized in Chicago last summer, and at that  
time Mr. Wylie was elected to the board of directors. Mr.  
Wylie will serve as chairman of the committee on tariff at  
the Washington meeting, and his paper will deal with this  
subject. It is expected that some or all of the interstate  
commerce commissioners will be in attendance during the  
conference.

## ANTICIPATE A COAL SHORTAGE

Fort Dodge—In anticipation of a coal shortage, the  
Plymouth Clay Products company, of Ft. Dodge, Ia., has  
placed an order for a solid train of Illinois coal to be  
delivered at their new sewer pipe factory adjoining the  
city on the south. The plant is rapidly nearing completion  
and the management expects to have the coal on hand  
when the plant is ready for operation. It is their purpose  
to have an abundant supply and it will be stored in suitable  
quarters for a winter's run of work.

## OBITUARY

Joseph Beardmore, a pioneer in the pottery trade at East Liverpool, Ohio, died at his home, aged 74 years. He resided in East Liverpool since 1849 and was an authority on all branches of the industry.

Jesse Green, aged 90 years, died at the Ryburn Hospital at Ottawa, Ill. He started the first brick-plant in LaSalle county. The funeral was held at the C. B. Hess residence, Mrs. Hess being his daughter.

Robert Heape, who returned to Syracuse, N. Y., from New Castle, Pa., to accept his former position as superintendent of the Onondaga Pottery, died at his residence, 614 Ulster street. He was 62 years of age.

Alfred Abrahamson, a wealthy brick manufacturer of Youngstown, Washington, died of Typhoid Fever at the Providence Hospital in Seattle. The estate is estimated at over \$300,000, made by him since 1889 when he started as foreman for the Seattle Brick & Tile Co., afterwards building his own plant.

## ACCIDENTS, DAMAGES AND LOSSES

The Huntington (W. Va.) China Co., has been placed into the hands of a receiver.

Joseph Kuss age 50 years, an employee of the Omaha (Nehr.) Brick & Tile Co., was found dead in the office with a bullet hole in his head, supposed to be self inflicted.

A. V. Sturgeon, manager of the Nansmond Brick & Tile Co., Suffolk, Va., was badly hurt by a clay car turning over and striking him on the back.

Roy Jones, a 12 year old boy, while playing at the Mason City (Ia.) Sewer Pipe Works had the flesh torn from his leg, laying bare the bone by getting caught in a dump car.

T. E. McDow has been appointed receiver of the McNeil Pressed Brick Co., at Newburn, Ill. The assets are stated to be \$27,000 and liabilities \$69,000.

The Bierbauer Brick Works at North Mankato, Minn., has its mechanics' liens placed on same for labor by the employees, so it is reported by the Press.

The New Jersey Terra Cotta Co., Perth Amboy, N. J., lost two cars of Terra Cotta in the East River by a scow turning turtle.

Robt. C. Morris has been appointed receiver in bankruptcy for the Atlantic Cement Company, 439 5th Ave., New York.

Van Lloyd, of Morrisville, Ill., who owns the Farmersville Brick Yard, is defendant for \$20,000 damages for striking John Heffner with a spade, inflicting serious injuries.

A landslide at the plant of the Brockway Brick Co., at Fishkill Landing, N. Y., caused considerable damage by pushing against the wall of a new boiler house and damaging it very much.

An execution has been issued against the Kohl-Happ Brick Co., 439 5th Ave., New York, but nothing was found to levy upon. The plant of the company is at South River, N. J.

The Alexander Brick & Terra Cotta Co., South San Francisco, Calif., has been attached for \$17,000 indebtedness filed by an Oakland firm, also laborers' liens for \$900 has been filed.

## FIRE! FIRE! FIRE!

Fire did damage to the brick plant of Simon Kline in West Reading, Pa.

The plant of the Standard Fire Clay Co., Fallston, Pa., was destroyed by fire, causing a loss of \$25,000.

The Sand-line brick plant at Bainbridge, Ga., owned by S. J. Warren was destroyed by fire. The loss is about \$13,000.

In the issue of Sept. 30, appeared an item that the Hiram Swank's Sons' Brick works at Johnstown, Pa., were totally destroyed by fire. This was erroneous, as the fire was confined to only a pattern house and caused only a small loss.

An overheated kiln at the plant of the Wilmington (Del.) Brick Co., caused a \$2,000 loss to the company. Charles F. Brickle is president of the company and M. D. Murphy, secy., treas., and manager. The office is at 3 E. 9th street.

The sheds covering the brick kilns of the Kissingner Bros. brick plant at York, Pa., were destroyed by fire while John, one of the brothers was attending a Masons' banquet. The loss is only a few hundred dollars and was not covered by insurance.

## THE LUCE ENGINEERING COMPANY

The incorporating of the Luce Engineering Company of St. Louis, Mo., to take over the business and good will of the G. E. Luce Engineering Company, which started in the Plymouth Building, at Chicago is another move in the right direction and it goes to show that when there is ability it is bound to succeed.

The company was incorporated about the first of September with \$35,000 capital stock to do general business in making plans, designing and erecting clay plants. The offices after the first of the year will be in the Third National Bank Building, until then they are at 421 Olive street.

The officers of the company are G. E. Luce, the president and founder of the old organization, Will P. Blair of Terra Haute, Ind., the vice-president. He is one of the best posted, if not the best, authorities on paving brick in America, that means in the world. And Peter B. Gibson of St. Louis, secretary and treasurer. He formerly held the same position with the Scott Manufacturing Company. All three officers are just the men for the positions for which they have been selected. Each will strengthen the new company and make it at once one of the leading firms in the country. A better combination of interests could hardly be had, as each are preeminently fitted for their part of the work.

Associated with the above people is Marion W. Blair, of Terra Haute, Ind. He has been the assistant engineer in the G. E. Luce Engineering Co., with Mr. Luce. He has had splendid schooling in this line ever since his common school days, and while one of the younger of us he is not so when it comes to design a good brick plant.

E. C. Peper is also connected with the new company. He has charge of the drafting department and we learn that his ability in this line is of the very best.

With the strong organization as described above, we see no reason why there can be anything but success for the Luce Engineering Company of St. Louis, Mo. Their announcement appears on another page of the Clay Record. If your plant is not working just right or you contemplate making additions to it or to build a new one they would be glad to consult with you.

## CLAY RECORD.

### BUILDING OPERATIONS FOR SEPTEMBER

Official building reports from 35 leading cities throughout the country received by the American Contractor, Chicago, compiled and tabulated, show that building operations continue decidedly active with the exception of New York City, where there is a notable shrinkage, amounting to seven million dollars, or 40 per cent, as compared with September of 1906. Leaving out New York City, there is a slight gain in the aggregate.

This shows local causes for both gains and losses, and indicates an altogether healthful condition. The loss in New York is but a continuance of conditions that have prevailed there for many months. During the past two years building there was very extensive, and this, together with difficulty experienced in securing building loans, accounts for the loss. Chicago, where more liberal financial conditions prevail with regard to real estate, shows a gain of 20 per cent. One of the most notable gains is reported from Baltimore, amounting to 63 per cent. The percentage of gains in the leading cities are indicated by the following figures: Baltimore, 63; Birmingham, 50; Chicago, 20; Cleveland, 3; Denver, 24; Detroit, 52; Duluth, 109; Grand Rapids, 96; Hartford, 772; Kansas City, 18; Little Rock, 153; Los Angeles, 9; Memphis, 7; Omaha, 18; Philadelphia, 28; Portland, 113; Rochester, 36; San Antonio, 141; Seattle, 187; Spokane, 57; Toledo, 25; Tacoma, 48. The following figures show the percentage of loss: Chattanooga, 74; Cincinnati, 12; Davenport, 59; Dallas, 14; Harrisburg, 34; Louisville, 21; Milwaukee, 8; Mobile, 48; Newark, 14; New York, 40; Pittsburg, 9; Pueblo, 48; St. Louis, 3; St. Paul, 53; San Francisco, 57; Scranton, 18; Syracuse, 16; Topeka, 9; Washington, 48; Worcester, 37; Wilkesbarre, 39.

### JUSTICE FAILS TO HOLD KITTANING MAN TO COURT

The charge of forgery brought against John Wick, Jr., of Kittanning, Pa., formerly president of the Ford China Company, by J. G. Vollmer of the Colonial Trust Company has been dismissed by Justice of the Peace Campbell of Kittanning.

The charge grew out of a note issued by Mr. Wick as president of the china company to secure a loan which he himself made to the company. He signed the note for the company, being given that power under its by-laws. Mr. Wick afterward sold the note, which the company was never able to pay.

The career of the Ford China Company, now in the hands of a receiver, is involved in the bringing of the forgery charge against Mr. Wick. In May, 1905, through an arrangement with the Colonial Trust Company, the company took over the management of the china company for one year. To secure its having full control Mr. Wick says he gave the company 1,910 shares of the 2,500 he owned, the understanding being that when the year was over the stock was to be returned.

At the end of the year the affairs of the company had not gone well and Mr. Wick says the trust company refused to return his stock. He entered suit against the company to recover the par value of the stock, or \$191,000, with \$50,000 damages. This case will probably be tried soon. Pending the trial of the case the forgery charge was brought.

### STUDENTS MAKING BRICK TO BUILD UNIVERSITY

The students of Wiley University, Marshall, Texas, are at present making brick for the large boys' dormitory which they will erect. This dormitory is to cost \$30,000.

It is to be five stories above the basement, 100 feet long by 80 wide, and it will be modern in every respect. As has been done in other constructive work about the grounds student labor will be largely used. Much of the brick yard force is made up students, and the class in masonry that received drill in erecting the Carnegie Library will take the lead in laying brick on the dormitory.

### ASSOCIATION FOR MUTUAL BENEFIT FORMED

The fire and building brick manufacturers of northern and central Pennsylvania was organized at DuBois, Pa., under the name of Brick Makers Association of Northern and Central Pennsylvania, for mutual benefits of this district. W. I. Harvey, of Hayes Run Fire Brick Co., Orvis, Pa., was elected president, and J. D. Ramsey, of the Elk Fire Brick Co., St. Mary's, as secretary. After some discussion they arranged to meet at the Fallon House, Lock Haven. All independent brick makers of Clearfield, Centre, Clinton, Lycoming, Cameron, Elk, McKean counties are invited to attend.

### BIG BRICK PLANT TO BE MADE BIGGER

With the completion of improvements now under way the output of the T. B. Townsend Brick & Con. Co's. plant, Zanesville, O., will be doubled and employment given to 100 more men. Two new kilns are now being constructed with the necessary railroad switches and improved machinery. Plans are also being prepared for new buildings. It is expected that the work on the improvements will be completed by spring.

### PURCHASE BY ST. LOUIS TERRA COTTA COMPANY

The St. Louis Terra Cotta Company has purchased a tract of vacant ground about six acres in extent on the west side of Sulphur avenue, between and adjoining the Missouri Pacific and Frisco tracks, in Cheltenham, as a site for a new plant. The property was conveyed to the company by Morton Jourdan, the attorney, in three parcels, for a total consideration of \$28,125. Mr. Jourdan bought one piece of the tract a few weeks ago. He was in Europe at the time, and, although it was surmised that he was acting for some manufacturing concern, the fact was not established until the titles were transferred yesterday.

The tract has a frontage of about 600 feet along Sulphur avenue between Manchester and Wilson avenues, and a depth of about the same distance. It is cut in two by the Frisco right of way. It is close to the present plant of the St. Louis Terra Cotta Company. The company is preparing plans for a new plant which will represent an investment of about \$150,000. This is to be built within a year and will be used for the manufacture of terra cotta products. The site is well located for switching facilities, and is in the heart of the clay-products industry of the city.

### CERTAIN CLASSES OF MATERIAL NOW VERY LOW IN PRICE

"The building material business is far from being satisfactory this fall, but we look for biggest building season we have ever had next spring and summer," said Warren B. Ferris, Columbus, O., sales agent for about 23 manufacturers of facing brick, roofing tile and terra cotta. "There are many reasons why the building has fallen off during the present fall. Money of course has been very tight. Wall street has been panicky and the railroads are largely responsible in discouraging building. Labor troubles have also entered into the situation and altogether I believe this has been the worst season we have ever had."

"This situation has naturally brought the prices of our material down until they are now lower than they have been for many years and this will have a tendency to cause more activity in building in the spring. The prices are fully 20 per cent lower now than they were six months ago. I do not believe the price will go up in the spring but I should say that it will go even lower for a while. The manufacturers are fairly well stocked up now, and by running their plants all winter, their sheds will be overflowing in the spring, operating on small capital will have to realize. This means that the price will not go up, at least not until the sheds are pretty well cleaned out."

In addition to this there are a great many buildings planned that would have gone up this fall but for the tight money market, that will be started next spring under more favorable conditions. Money is even now loosening up, but it is too late now to affect the building trade much this fall. But this, with the low prices of material, will surely start things next spring. I would advise persons contemplating building in the spring to get a good early start for when the material begins to be cleaned out of the sheds the prices will surely go up."

Building material men generally charge a great deal of the fall off in business this fall to the railroad agitation. The railroads are responsible for the conditions in-so-far as they fail to furnish sufficient cars to move all shipments of material. This they think is due, either intentionally or otherwise, to mismanagement. "It has been usually the case that when a firm asks for eight or ten cars for a special shipment they can not get more than two or three. At the same time there are places where the cars are strung along sidings for miles and out of use except to cause congestion. This does not look like very good operating management, but it may suit the present policy of the roads in the face of agitation for governmental control."

### CHAMBER GOING AFTER DENVER BRICK TRUST

The chamber of commerce will probably take up an investigation of the methods of the brick trust now operating in Denver as soon as the coal trust has been brought to terms. George C. Manly and Charles S. Pitsche have requested the chamber directors to insert their probe into the brick combine which is operating with the aid of the bricklayers' union, it is charged, to Denver's damage in a commercial way. The chamber will make some preliminary investigations before appointing a committee to set to work in earnest.

### UNUSUAL ACTIVITY IN SILICA BRICK

Because of a number of large orders recently placed with the Robinson Clay Products Co., Akron, O., for silica brick, this company has been working plant No. 8, where this product is manufactured, full capacity in order to fill its contracts. Nearly a million silica brick are turned out every seven days from the kilns at this plant, and a double shift of men are employed in the rush.

Hon. J. Alexander is the inventor of silica brick, and he was engaged exclusively in its manufacture up to the time his interests were merged with that of the Robinson Clay Products Co., about three years ago. The material used in the brick is clay, white ground pebble and lime. The silica brick, once made, is indestructible and is used in lining blast, steel and glass furnaces. It requires many degrees of heat to burn the brick, and a vast amount of coal is used in the burning, each kiln consuming about 70 tons. Some time ago the company experimented with gas in burning the silica brick, but it was found impracticable. No other brick known will stand the great heat which is given to silica. The common shale brick would melt and run together under it.

There are seven kilns used in burning this brick, and each kiln has a capacity of over 100,000.

The silica plant is located along the Valley railroad in East Akron, north of the mammoth new sewer pipe plant the company is building.

The white stone pebble used in the manufacture of its product is secured from beds the company owns south of Harberton.

### INDIANAPOLIS HEAVY LOSER ON FALSE PAVING REPORTS

It has been discovered that Indianapolis, Ind., has been robbed of thousands of dollars by the falsifying of the reports of inspectors in connection with the repair of asphalt streets.

Just who falsified the records is not known. The inspectors say they lent their books to the superintendent of the Western Construction company, which has the contract for the repair work, and the company has discharged the superintendent who was in charge. The city engineer is holding back \$10,000 from the company till the records can be straightened out.

The changes in the books were bunglingly made. In some cases where the space repaired was 1 x 1 foot, the figure was made 9 x 9, increasing the work eighty-one square feet. In other cases the figures were made even higher. Once or twice the patches supposed to have been repaired were larger than the street is wide. The city pays for the repairs by the yard, and the bill for July alone was \$18,000.

### AN ILLINOIS BRICK MANUFACTURER 103 YEARS OLD

Patrick Clary, of Guilford, Ill., who is probably the oldest man in Winnebago county, has been ill for a few weeks, but is now all right again and able to be out. Mr. Clary lives on what is known as Bean street, in Guilford, about a mile and a half east of the high bridge and gives his time to the active management of a yard owned by him.

### SUCCESSFUL RUN AT WESTERN STONEWARE CO. IS BREAKING ALL RECORDS OF THE BIG CONCERN

With the plants of the Western Stoneware company being pushed to their fullest capacity and still days and weeks behind in their orders it again becomes evident, if such evidence was needed, that the local men behind the great merger of western stoneware plants knew what they were doing when the Western Stoneware company was formed and that they are delivering the goods in accordance with their promises.

Evidence of the prosperity of the company in which so many local people are interested, is everywhere apparent. The second quarterly dividend has been declared and yet the company is but in its infancy. New territory is continually being entered by its salesagents and the orders within the past few weeks have broken all records. The plants are being pushed to their utmost, and still the orders are unfilled.

The developments in the advance of the organization will be appreciated by Monmouth, (Ill.) people generally for they realize how dependent the prosperity of the community is dependent upon the success of its manufactories.

Only within the past few days monster orders, which have sent past records of the company scurrying from the boards, have been received. One came from a big concern in New York, and was for a big shipment of ware which will keep the plant making it busy for sometime. Another order equally as astounding in its totals came from St. Louis. But these two big orders, interesting as they are, are only a portion of the daily orders received.

Thus it will be seen that the new concern is beginning to make itself felt in the marts of trade and its ware thoroughly tried and popular wherever it has been used cannot fail to make good and bring future orders. Officials of the company, which had its headquarters in this city, are more than pleased with the outlook for business and are confident that the concern is just entering upon a long era of prosperity. The two local plants are being pushed to their fullest capacity and new men are being continually added to the pay rolls in an effort to catch up and keep even with the ever increasing volume of orders.

### OIL USED IN THE NEW CONTINUOUS KILN AT SEBRING POTTERY

The new continuous decorating kiln, recently built by the Selbring, Ohio pottery, has been given a thorough trial. It required but 15 minutes to burn a crate of decorated ware. The usual time required to burn a kiln of such ware is from 6 to 8 hours and but one kiln can be burned each 24 hours owing to the fact that the kiln must cool before it can be emptied. The fuel used in the burning of the new kiln is oil. A crate of ware is placed in the kiln every 15 minutes as one emerges with ware burned. There are several crates of ware passing through the fiery furnace at all times. The kiln is expensive but successful, and the ware is pronounced the finest.

### SEASON UNSATISFACTORY IN NEW BRITAIN AND BERLIN DISTRICT

The brick-making season in New Britain, Ct., and Berlin district, which is now approaching its close, has not been satisfactory. Although manufacturing operations are usually continued until November several of the concerns have already shut down and discharged their employees. Other companies will follow at an early date. The reason for the early closing is that the kiln sheds are stocked to their capacity with burned and unburned brick.

Most of the local brick manufacturers who were formerly members of the Central New England Brick Exchange of this city entered last spring into a contract with the Federal Brick Company of Rhode Island, which agreed, under various conditions, to take their product for a period of five years. One feature of the contract is that the Federal company pledges itself to ship enough of the burned brick to permit the plants to be kept steadily in operation. The market has recently been so dull and the demand for brick so limited that the Federal company has found it difficult to comply with this requirement, and the result is that the stocks of manufactured brick on hand in the yards are so great that in many cases further manufacturing operations cannot be continued. Another provision of the contract is that all brick shall be paid for within sixty days after the burning.

### SCHOOL POTTERY PLANT

The plans for the new technical high school at Cleveland, O., contain provisions for a model pottery plant, which is to be made a feature of the instruction in manual training in the Cleveland public schools hereafter.

The new plant will be in the applied art room, where also will be the art metal work and leather modeling sections. The pottery equipment will consist of a kiln set of wheels, and apparatus for hand building, casting and throwing pottery.

J. W. Vickerman, the new superintendent of the machine shop, is in the city. He comes to Cleveland from the Burt Manual Training School in Saginaw, Mich.

### A NEW TENNESSEE FIRE BRICK WORKS

The Harley Pottery Company, Nashville, Tenn., which decided a few weeks ago to engage in the fire brick business, has been delayed somewhat in carrying out its plans by the enormous demand for the products now being made. Mr. Harley states that the demand for jugs is the largest ever known, and to supply this demand every attention is demanded. The Carolinas, Georgia and practically all the Southern States are heavy jug buyers in the Nashville market. The prohibition laws of some of the states have served to shift the demand to other points, but Mr. Harley states that, regardless of the laws, the demand for jugs increases every week. The plant is now operating day and night, and every minute is working to its capacity.

Mr. Harley states, however, that the plan to engage in the fire brick business is only temporarily delayed, and that later in the fall he will begin the erection of a large plant for the manufacture of fire brick. The clay found in Henry, Carroll, Humphrey and Dickson counties is the best in the world, for fire brick purposes, and he will develop the industry on an extensive scale.

**SAND OR LIME BRICK OR BLOCK NEWS**

A plant for the manufacture of Hydrated lime is being erected at Bethlehem, Pa.

Cheyenne, Wyoming, has two cement brick plants in operation at the present time both doing nicely.

The plant of the Millholland Brick Co., at Marion, Ohio, has been leased to Harbeson, Morris & Co., who will manufacture a patent-plaster board.

The Belt Line Brick Co.'s plant at St. Paul, Minn., has just been completed by the American Sandstone Brick Mch. Co., of Saginaw, Mich., and M. C. Mercier of Saginaw is in charge.

The Marysville (Cal.) Sand-Cement Block & Brick Co., has been organized with \$50,000 capital stock. Michael Reisinger is president, F. B. Kupser, vice-president, J. J. Morrissey, secretary and J. P. Arnold, treasurer.

Alderman Isaac Bacharach was the highest bidder at the public sale of the Old Ventnor Brick Plant at Atlantic City, N. J. He bid \$30,000 for it. It is supposed the purchase was made in the interest of the Atlantic Lumber Co.

The Inter-State Pressed Brick Co., St. Paul, Minn., has been incorporated with \$10,000 capital stock to manufacture cement brick and artificial stone products. The officers are F. T. Day of Waseca, Minn., president, G. L. Rolfe of Spokane, Wash., vice-president and C. H. Watson of Waseca, Minn., secretary and treasurer. The main office is in the Home Life Bldg., St. Paul, Minn.

J. A. Corley, has succeeded his son, R. L. Corley, in the management of the Owensboro (Ky.) Sand-Lime Brick Co.

The Rochester (N. Y.) Composite Brick Co., whose office is in the Exchange Place Bldg., is among the most active in that city in the supply of brick, concrete blocks, sills, Lintals, etc.

Oklahoma City, Okla., is competing with Dallas, Texas, for the location of a large concrete brick manufacturing plant to be erected by Charles W. Jones and associates of Charlotte, N. C. The brick to be manufactured has recently been patented.

The plant of the Laketon, (Ind.) Sand Lime Brick Co., is to be removed to Anderson, Ind., as the railroads of Laketon refused to grant switching facilities and declined to aid the plant in any way, therefore the plant was not profitable to the stockholders.

Raymond L. Corley, secretary and treasurer of the Owensboro (Ky.) Sand-Lime Brick Co., since it first began business has resigned his position and is now the general manager of the Janesville (Wis.) Granite, Brick & Stone Co., having already moved there.

At Brooklyn, N. Y., a plant will soon be in operation for the manufacture of brick from sea-sand. In the past sea-sand brick have not been successful on account of the lime in it. This matter is said to be settled and the plant now under erection is said to turn out 240,000 brick daily.

## The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 10% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

### CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc. are left down in a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



**WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.**

## MISCELLANEOUS ITEMS

J. B. Northop, 813 North 25th street, Birmingham, Ala., is in the market for brick machinery.

A company with \$10,000 capital stock is being formed at Columbiana, Ala., to build a brick manufacturing plant.

The Manson (Iowa) Clay Works has put in a large new tile making machine at their plant. This will than the capacity.

J. F. O'Keefe, Pocatello, Idaho, has a 250 acre deposit of shale which he wishes to have developed and will sell same or organize a company with the right parties.

Teams were put to work last week on the building of the switch track for the Carlyle (Kansas) Brick Co.'s plant and a force of men put to work cleaning off the ground.

The Luverne (Minn.) Brick & Tile Co. has been incorporated with \$50,000 capital stock. Incorporators are R. B. Hinckley, R. S. Hinckley, C. W. Sheriff and John Sheriff.

I. S. Finkel Marshalltown, Iowa, has installed a Fernholtz outfit in their plant, furnished by the Fernholtz Brick Machinery Co., Boyle Ave. and Old Manchester Road, St. Louis, Mo.

Supt. Frank McDonald of the Workhouse at Minneapolis, Minn. has revived his pet scheme for the establishing of a brick yard plant at the workhouse. He asks for \$15,000 to build same.

The Mitchell Clay Manufacturing Co., St. Louis, Mo., are to rushed with orders that they have found it necessary to make new installations of machinery at the plant and are now preparing for same.

The Henry Martin Brick Machine Mfg. Co., Lancaster, Pa., have recently shipped to Los Angeles, California, one of their improved heavy and large 10" x 20" crushers, and a 36" x 12" Revolving Screen.

The Stein-Williams Brick Co., Cleveland, Ohio, has been incorporated with \$60,000 capital stock. Incorporators are C. C. Williams, M. M. Egger, F. S. Wellmer, Frank J. Manes, Wm. H. Cromwell and Guy W. Shanks.

George A. Mowatt, Chewelah, Wash., has purchased Dr. S. P. McPherson's interest in the Chewelah Brick Works. The new company will rearrange the yard and add some more machinery to the plant which will enable them to manufacture tile.

The Perth Amboy Fire Brick Co. of Perth Amboy, N. J., have recently equipped their plant with one of the "Martin" Heaviest and best Style "A" double mould entrance Steam Power Brick Machines, installed by the Henry Martin Brick Manufacturing Co., Lancaster, Pa.

The Sayre-Ford Manufacturing Co., of Camden, N. J., are installing on their plant the "Martin" Patented Rack Pipe Steam Brick Dryer system, having a holding capacity of 40,000 stiff mud brick daily furnished by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

The Stockport (Iowa) Tile & Brick Factory will be located on the site of the factory destroyed by fire. The company is capitalized at \$10,000. C. W. Wheatley is president, Miles Shelman vice-president, R. M. Harlan secretary, and William Brewer treasurer. Work is already commenced in cleaning up the debris.

The Muskogee (Ind. T.) Vitrified Brick Co., is enlarging its plant which is located in the north part of the city.

The Missouri Slope Brick & Tile Co., Dickinson, N. Dak., has increased its capital stock from \$35,000 to \$75,000.

The Consolidated Brick & Tile Co., has moved its principal office from Winston-Salem, N. C., to Pine Hill, N. C.

The Pierre, S. Dak., has completed the burning of the first kiln of brick and are now delivering them to the trade.

The Maryland Terra Cotta Co., Baltimore, Md., has bought additional land adjoining their plant so as to enlarge same.

The Guthrie (Okla.) Brick & Tile Co., are manufacturing 6,000,000 brick to be used in paving some of the streets of Guthrie.

The Wiggins (Miss.) Brick & Tile Co., have closed a contract for machinery to be installed in their plant at an early date.

The West Coast Brick & Tile Co., Centralia, Wash., has been organized and C. A. Bartz is the president. The clay is said to be of a very fine quality.

The Oskaloosa (Ia.) Paving Brick Co., is now engaged in getting out a few kilns of tile for their fall and winter trade, the demand for which is very large.

The new brick works at Cynthia, Ind., has been started up and is now working very satisfactorily. They expect to fill orders the later part of the month.

The brick yards during the Hudson River shut-down the first of the month as per the agreement of the manufacturers and will not operate same again until next spring.

The Alonzo Curtis Brick Co., Grant Park, Ill., has orders on their books for 20,000,000 brick which with one exception is the largest amount of advance sales they have ever had.

Mr. Irwin of Peabody, Kansas says he will build and operate a brick plant at Hutchinson if the proper shale can be found. Tests are now being made by a competent brick man.

From a reliable source it has been learned that a company will be formed to make mud brick at Findlay, O., on the sight of the Hydraulic Press Brick Co., and using their old kilns.

The Webster Fire Brick Co., (So. Webster, O.) has been compelled to close down its plant on account of the drought. The wells and creeks are dry and water for steam making cannot be had.

The Wise County Brick Co., Bridgeport, Texas, has been incorporated with \$60,000 capital stock. Incorporators are C. W. Martin, J. W. Patterson, W. O. Stephens and J. D. Montrap.

The Crush (Texas) Brick & Tile Co., has been incorporated with \$15,000 capital stock. Phil. H. Foscoe is president, Howard Templeton, Vice-president, W. B. Weaver, secy., and manager.

The Topeka (Kansas) Commercial Club is busily engaged in finding a shale with a 10 mile radius of the city that is suitable to make pottery. A large stoneware company is figuring on going to that city.

The Kinzua Valley Paving Block Co., was incorporated at Camden, N. J., with \$200,000 capital stock to manufacture paving blocks, building blocks and brick, etc. The incorporators are M. A. Madisou, Clarence D. Lamb, and S. E. Lewis.

G. E. Carlyle is organizing a company at Olive Hill, Ky., for the manufacture of fire-brick.

The machinery for the San Angelo (Texas) Brick Co., has been installed and a daily capacity of 30,000 brick is made.

William Holden has bought of Wm. Schultz the Wayland (Ia.) Brick & Tile works. Immediate possession was taken and the plant will be put into full operation.

The United Fire Brick Co., Uniontown, Pa., has been incorporated with \$50,000 capital stock. The owners are J. B. Palmer of Uniontown and John Palmer of Pittsburgh.

L. E. Bennett of Millsap, Texas, is organizing a brick company for Brownwood, Texas, where an excellent body of fine shale has been located. The plant will cost \$22,000.

A new \$40,000 brick works is to be built at Carlisle, Ia. The company has been granted a franchise to use the streets for electric line and has leased land near the town for a clay bank.

Straight Bros., Fonda, Ia., will build a \$40,000 tile plant about a mile and a half north of Anburn, Iowa, and east of Grant City. A right-of-way has been secured to the C. & N. W. Ry.

The Drury Brick & Construction Co., York, Pa., has issued bonds to the amount of \$20,000, giving a mortgage on plant for same and will make extensive improvements that will increase the capacity of the plant very much.

John K. McGarrah, president of a brick company at Shreveport, La., has been at Beaumont, Texas hoping to find a clay deposit near there on which to establish a plant to manufacture both common and pressed brick, burning same with gas.

The Deer Creek (Minn.) Brick Co., have installed a new brick making machine in their plant.

The New Era Vitrified Brick Co., Detroit, Mich., has been incorporated with \$150,000 capital stock.

The new brick yard at Fromberg, Mont., under the supervision of Mr. Wood, is nearing completion.

The plant of the George Kruse Brick Co., Decatur, Mich., has been sold at public sale to Will Wright for \$5,300.

The Providence (Ky.) Pressed Brick Co., will double the capacity of their plant in order to keep up with the demand for their goods.

The Peoria, Ill., workhouse made 800,000 brick this year, all of which are now being offered for sale. The plant is now closed for the season.

The Pocatello (Idaho) Press Brick and Mfg. Co., Ltd., has bought a 10 acre mill site just north of the city limits on the Oregon Short Line.

A. L. Bronson of the Marlin (Tex.) Pressed Brick Works states that he has recently shipped out over 300 carloads of his brick, the quality of which makes the demand.

The Lonsdale Face Brick Co., Knoxville, Tenn., has prepared to run their plant through the entire year, having constructed a large clay storage shed. Other improvements are also being made.

The Vandalia (Mo.) Fire Brick Works is to make important improvements to their plant, a new grinding pan, smoke consumer and drying system are to be added. J. E. Riggins, R. A. B. Walsh and C. W. Parker of St. Louis, to look over the plant and make the arrangements.

**The GILLETT DOORLESS  
Hot Air FIREBOX For Kilns  
Blast**  
Patent No. 792,789



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog, and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

**A. GILLETT & CO.,**  
Factory, St. Louis, Mo. **ALEDO, ILL.**

**DIRECT HEAT**

**DRYERS**

FOR

**BANK SAND  
GLASS SAND,  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**  
62-64 William St. **NEW YORK CITY**



## DUMP CARS FOR SALE

A few good "Mala Line" Dump Cars. Will be put in A1 condition. Write for description. Detroit Car Building and Equipment Co. Detroit, Mich.

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled factories are offered complete or in part. Cheap. Have several Brewer Mills for sale, and others.  
Engines, Boilers, Crushers Drying Pies, etc. If you wish to buy or sell write to  
Brick and Tile Machinery  
Secor, Ill.

## FOR SALE

One Quincy Clay Gatherer and Flow. Brand new, in use only two weeks. Address  
Rik City Brick Co.  
Rik City, Kansas.

## FOR SALE

One power Refraps, for same one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.  
American Enamelled Brick & Tile Co.  
1 Madison Ave. New York

## A SOUND PROPOSITION FOR N. W. ALBERTA, CANADA

WANTED—Manager and Superintendent who can introduce capital to equip a complete brick making plant on my clay field, 20 acres, proved as to feet and analyzed by the Henry Martin Brick Machine Mfg. Co., Pa. C. S. A., who recommended using the following outfit: Martin Style "P" Liquefactors, and Style "A" Brick Machine for molding and the Martin Steam Brick Dryer.  
The situation of the field is close to the railway siding of Claymont, on the C. N. R. 5 miles from Vermilion City, the belly of the famous Nanawachewan Valley, and the Vermilion District where bricks are now selling for \$20.00 per thousand and great demand at that. Address  
ALEXANDER FANON,  
Pioneer Builder and Contractor  
Vermilion, Alberta.

N. W. Canada

## FOR SALE CHEAP

Two American Clay Machinery Company No. 21 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 2500 to 3000 per hour. Greatest bargain! Write for particulars  
GREAT EASTERN CLAY CO.  
20 Cortland St., New York.

## 50 PERCENT SAVED

Fifty percent saved on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash.

H. WALSH

1311 Lanier St., Newburgh, N. Y.

## WANTED

Superintendents, Managers, Experts, also office and salesmen with brick, tile, pipe, or building material experience. Write.

HAPGOOD

302 Broadway, New York City or  
1010 Hartford Bldg., Chicago, Ill.

## FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested to a good money making plant address  
LUCK BOX 29 care of CLAY RECORD  
Chicago, Illinois

## BRICK YARD FOR SALE

Old established yard in good town of 5,000 people, with good country surrounding. 40 acres, good kilns and sheds. Good reason for selling. Call on or address  
CHARLES McNEAT  
Maryville, Mo.

## FOR SALE CHEAP AT ONCE

Good brick yard in county seat, capacity 30,000 brick daily. Can't supply the demand. For brick at \$1.75 to \$2.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 5 miles. Plenty of labor and 40,000 ft. of pipe. Address  
For selling. No competition. Address  
GEORGE RANNEY,  
Leventine, La.

## WANTED

Wanted stone ware Potter—both wheel and Kiln men. Write to  
SPOKANE POTTERY CO.  
Clayton, Wash.

## WANTED

A travelling salesman, a man who has a general knowledge of the brick business. Permanent employment.

Address: B. C. care Clay Record  
Chicago, Ill.

## FOR SALE.



Right and left-hand One, Two and Three Way  
valves, of various gauges, radius and weight rail.  
at special prices.  
THE ATLAS CAR & MFG. CO.  
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails. 18, 16, 14 and 12 pound. For prices address  
ATLAS CAR & MFG. CO.  
Cleveland, Ohio.

## KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of kaolin ever mined in Georgia, or the south  
L. T. LEE, Zenith, Ga.

## PLANT FOR SALE

A good steam brick plant for sale, Chambers Bros. Co. brick machinery, engine and boilers in first class order. Leave caption  
JOHN HANARTY R SON  
34 and South Streets  
Philadelphia, Pa.

## FOR SALE

Brick manufacturing plant, capacity 40000 Six mould dry press, small planing mill and lumber yard. Good shipping territory and an established paying business. Address  
J. J. CARR OF CLAY RECORD  
Chicago, Illinois

## MACHINERY FOR SALE

Soft mud outfit manufactured by the American Clay Working Machinery Co., consisting of Upright Brick Brick Machine direct attached Pug Mill, Mold Sander Brick Molds, 8 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition; very reasonable price. Apply to  
BALTIMORE VITRIFIED BRICK CO.  
Baltimore, Md.

## PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Midgewood, Clayton County, Iowa. For particulars write  
S. L. CLARK  
Redfield, So. Dak.

## WANTED

Wanted a small dry pao in good condition. Parties answering this advertisement will please give the name of the make of the pao, together with best price.  
CLEMENS JENOBAS  
Streator, Illinois

## PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new dry brick plant. Plenty of shale, and good market for all the brick. Address  
DENNIS, care Clay Record  
Chicago, Ill.

## FOR SALE

A fine Kaolin bed of 120 acres, with strata of excellent clay from 12 to 18 feet deep, light over burden of soft mud. Good plant already erected. Large quantities have already been mined and sold. Will be brought cheap. For information and samples, address  
J. B. SALLEY, Attorney,  
Albion, S. C.



See better make, all iron  
31 and 32 ft. 9  
4 Wheel, \$2.00  
5 Wheel, \$2.15  
6 Wheel, \$2.25  
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## THE MECHANICAL TREATMENT OF LIMEY CLAYS

The modern tendency in dealing with clays which show defects due to the presence of lime in the finished brick, is to adopt one of two methods of treatment, according to the condition in which the lime or the material from which it is derived occurs in the raw clay. This differentiation at the very commencement of the treatment is of comparatively recent origin, but in it lies the main reason for success or failure in the treatment of this class of clay, says a writer in the *British Clayworker*.

In clays containing chalk or other lime compounds of a soft and finely powdered nature it is usually sufficient to grind up the whole mass fairly fine, and to make it up almost at once into goods in the ordinary plastic process, but if the source of the lime is found to be in the form of stones or pebbles, or even granules of limestone or similarly hard material, this course of treatment will not serve to produce good brick and tiles.

For clays containing lime compounds in size larger than one-twentieth of an inch in diameter, and of a hard, stony nature, special treatment is needed, this treatment varying to a large extent with the size of the impurity and with its nature, as well as with the relative plasticity of the clay as a whole.

If the clay is very plastic and the percentage of impurities not too large, the whole material may be ground finely and used direct, the lime compounds acting as a material which makes the clay somewhat leaner, and therefore better to work than an excessively plastic clay. If on the other hand the clay is somewhat lean it may be necessary to remove the lime compounds in order to increase the plasticity of the remaining material, as well as to lessen the possibility of damaged goods, owing to the blowing action of the lime in the finished brick.

It is at this stage that the importance of choosing the correct kind of machinery for working the clay is so vital to the interests of the brick and tile manufacturer, for the installation of inefficient or of unsuitable machinery may easily make all the difference between his success and failure.

## CLAYS WITH LARGE STONES.

When the clay contains a noticeable proportion of stones larger than one inch in diameter, it is generally desirable that these should be picked out by hand or separated by means of a special machine which will remove without crushing them.

Hand picking, though slow, is relatively cheap, and with reliable and conscientious men is very effective. As so much depends upon the thoroughness with which the pickers work, it is often desirable to reward those who show special diligence by means of a bonus system, in which the percentage of material to be removed from the clay being known, the workmen engaged in picking it out are paid according to the proportion they remove. Thus one firm pays its pickers on a special piecework plan as follows:—The clay contains on an average about 9 per cent of removable limestone, and the men are paid not by the number of tons of clay they pick but by the number of tons of limestone they accumulate; 3s. 6d. a ton being the actual price paid in this instance in addition to their standing weekly wage. As the place where the picking is carried out is difficult of access to men carrying loads, and the stones when paid for are removed safely out of reach of all the workmen, there is little likelihood of the men bringing stones from other sources and pretending that they have been taken out of the clay, and a further confirmation of the accuracy of the payment made is obtained by checking the number of tons of clay actually passed through the mills. This system of bonus has worked admirably in this particular instance, but it can obviously be only applied in the case of clays containing stones which are easily visible to the workmen engaged to remove them.

## SMALL STONES AND THEIR REMOVAL.

For clays containing smaller stones down to one-eighth of an inch diameter, the use of a clay purifier or stone separator is to be preferred, though these machines always cause the wastage of a rather important proportion of clay. There are many patterns on the market, but all the machines used for this purpose are designed with two principal objects, and upon the extent to which they fulfil these aims they must be judged.

## CLAY RECORD.

The first requirement of a stone separator is that it must work continuously, and not require to be stopped and emptied at frequent intervals. The second requirement is that it must use but little power. Both these requirements are largely met by the use of either perforated rolls, through which the clay is pressed whilst the harder stones are carried round on the roller, and scraped off automatically at a convenient part of the revolution, or of a pugmill with a perforated barrel which forces the clay through the perforations, and expels the stones together with some clay at the further end of the mill.

The first pattern of stone separator is liable to crush the stones, and send them through with the clay; the second pattern tends to waste clay by not completely separating it from the stones. Other appliances have been placed on the market from time to time, but they are likewise subject to these disadvantages, or they are too expensive in operation, because they require the attention of two or more men to keep them clean. Hence there appears to be a large scope for the production of a machine which shall effectively remove small stones from clay without crushing them, and at a considerably less cost than the old-fashioned but very effective way of washing the clay and allowing the stones to settle out from the slip.

When stone separating machines are used, it is also essential that they should be built of such a height as to be easily cleaned. Many of those in use at the present time are far too high for efficient opening and cleaning.

## CRUSHING ROLLS AND THEIR ADJUSTMENT.

For most purposes the clay, after separation of the larger pieces of lime compounds by either of the methods just mentioned, must be pressed between crushing rolls so as to reduce it to a sufficiently fine state. These rolls must be adjusted as regards diameter and the distance between them to suit the peculiarities of individual clays, and in some cases two, three or even four pairs of rolls must be employed when very strong clays are being treated.

It is not always desirable to have both rolls in a pair of the same diameter, and where much reduction has to be carried on with a clay of considerable hardness, or containing hard materials, it is more economical to carry out the reduction with several pairs of rolls, each pair having the rolls set closer than the pair in front, so that the reduction of the material may take place gradually and produce a less strain on the rolls than when a single pair set very close is used.

The three arrangements of rolls for clays containing much limestone or other lime compounds are shown diagrammatically in the three accompanying figures, in which Fig. 1 represents the ordinary rolls, Fig. 2 a combination of rolls and stone separator, and Fig. 3 a combination of pan, mill and rolls.

Where the whole of the material can be made up into bricks or tiles, and the non-clayey matter is fairly well distributed and not too hard, the arrangement shown in Fig. 1 will usually be all that is demanded. It consists of one pair of rolls set fairly close, according to the nature of the material, and a second pair each of a different size (though this is to some extent optional) set much closer, and for

many clays not more than one-twentieth of an inch apart. After passing through both these sets of rolls the material enters a pugmill or mixer (shown below the rolls), and from thence is delivered to the makers, or is made into wire-cut goods direct from the machine. Sometimes a separate mixer is necessarily inserted between the second pair of rolls and the pugmill, but this depends on circumstances, and does not alter the scheme of working, as the additional mixer is only equivalent to using a longer pugmill. Fig. 2 shows the stone separator arranged to deliver the purified clay to the crushing rolls, which in this case are set very close, as the stones having been removed, no widely set rolls are needed. As in the former instance, the rolls deliver to the pug press.

In Fig. 3 a more expensive method of grinding the material is shown, and this arrangement is only suitable for specially difficult clays, or for better class goods, for which fine grinding is needed. The use of an edge-runner mill is generally found to be too expensive for the production of the goods ordinarily made from limey clays, but otherwise they form one of the most satisfactory crushing machines, as they squeeze, crush and mix the clay at one operation. A further process of crushing is then passed through, as the material, after leaving the edge-runner mill, enters the crushing rolls, which, like those in Fig. 2, are set close together, and leaving them enters the pugmill.

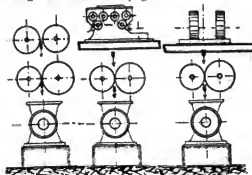


FIG. 1. FIG. 2. FIG. 3.

In each case it is essential for good working that the rolls should be sufficiently large in diameter (for average outputs they should never be less than 24 to 26 in. diameter), and that they are kept well dressed. One of the most frequent sources of trouble with strong clays containing lime compounds arises from the irregular surfaces of the rolls, due to their wearing unevenly, whereby the coarser particles of material pass between them without being crushed.

Numerous methods have been suggested for securing the more even wearing of the rolls, and one firm has placed a machine on the market in which the rolls have a sideways motion in addition to their ordinary one, so that whilst in use one roll gradually travels to the right and the other to the left, and vice versa, so as to distribute the wear and tear more evenly over the surface. This arrangement apparently works satisfactorily, but has not been sufficiently long in use to become really popular.

For general purposes the most satisfactory plan is to have a duplicate set of rolls, and so substitute these whilst the others are being turned true, or, failing this, there are

various appliances on the market by means of which the rolls can be trued without removal from the standards, though the disadvantage of truing them *in situ* is the danger of iron or steel becoming mixed with the clay, and so discolored the goods.

The strain and wear of crushing rolls is very great when a hard clay is being worked, and when the rolls are set close, and unless they are constantly attended to their surface becomes so uneven that the rolls are of little use. This is one reason why so many sets of rolls are used in working the clay in some yards, the owners apparently not realizing that the badly worn rolls in the earlier stages cannot do their work properly without dressing; instead of this being done new rolls are added, until in one case a firm which found two pairs of rolls quite satisfactory for the first five years of its existence have gradually added to their machinery until now the clay passes through no less than five pairs of rolls before it enters the mixer. Quite recently, acting on advice, they have discarded two pairs of rolls, with satisfactory results, and are retaining them simply as spare parts to be substituted for the others, now in use, as soon as these latter become too worn. By keeping their close-set rolls well dressed and true, this firm is saving considerably in the power used, and therefore in the cost of manufacture of their goods.

One word of warning remains to be written in conclusion, namely the suggestion that rolls too closely set may do more harm than good. Such rolls spread out the impurities in the clay into "plates," and these unless broken up and well mixed with the clay by the later stages of working will actually cause more damage to the surface of the goods by blowing than would the original unflattened grains, because their surface has been increased by their alteration in shape.

In several instances the setting of the rolls slightly further apart has greatly reduced the proportion of defective goods where "blowing" of lime compounds in the clay has been the chief trouble, and it is therefore necessary that each clayworker should ascertain for himself what is the correct distance between the rolls. For most clays the final rolls should be set from one to three-twentieths of an inch part, but as just suggested there are some clays in which so close a setting is undesirable.

#### ORDERS ARE GREATER THAN CAPACITY OF PENN PLANT

Reports received from Lansing, Kansas, are to the effect that the state penitentiary brick plant is unable to keep up with the demand for brick at the state institutions where the construction of new buildings was authorized by the legislature last winter. First estimates on the cost of the new buildings authorized were made on the supposition that the penitentiary brick would be used and it is now probable that some of the new buildings will not be as large as was planned for the reason that brick will have to be bought on the open market. The legislature also instructed the board of managers to pave the road from Leavenworth to Lansing with prison brick and this work is taking a large portion of the output of the penitentiary brick plant. Up till this time the penitentiary has been able to furnish brick almost as rapidly as they have been needed but as many of the large buildings are now just well under way the demand is larger than it has been.

#### THE ACCOUSTIC PROPERTIES OF BRICK TILE AND TERRA COTTA

Although a great deal is known concerning the acoustic properties of wood, and of various metals used in construction, it is not a little remarkable that analogous properties in brick, tile, faience and terra cotta should be so little understood. This ignorance arises in great measure from the circumstance that both physicists and architects have contented themselves hitherto by considering acoustics from the point of view of the shape of interiors of buildings only. Or, in a secondary way, the materials lining the walls, and such as may be regarded as capable of reinforcing sound, have received some attention. As a matter of fact, in many large buildings such things as resonant boards, reflectors, and matchboard dados are quite subservient to the chief materials of construction as often laid bare in the walls of the higher part of the building inside. Again, we commonly find that at least some considerable part of the walls is lined with clay goods in some shape, such as tiles, glazed panels, and the like.

Everybody who has studied the acoustics of large buildings admits that the chief enemy to deal with is reflection of sound, which produces echoes and general uncertainty in hearing, no matter whether the lecturer be strong or weak in voice. Consequently we find that when the building having been newly put up, the acoustic properties are bad, the first thing the architect flies to is that which he understands best, namely wood. During the present century there has been quite a boom in that material, though we ought not to forget the metal reflector placed over the pulpit in St. Paul's Cathedral, which has been so successful in that particular case.

Yet, but a little consideration of some elementary problems in physics suffices to show that wood is by no means always desirable, or can be in any way successful, in the interior of many edifices. Wood is a great reinforcer of sound by reason of its elasticity, but that very property is disastrous in certain interiors.

Sound is most perfectly reflected from smooth surfaces, and when acoustics of the interior are bad owing to form of construction, and reflection is wanted, what could be better than glazed surfaces? Large glazed tiles, or faience work in panels, are most admirably adapted for the purpose, but how often do architects use them for their acoustic properties. On the other hand, when owing to interior shape of the building reflection from the walls is not wanted, where can any better material than porous clay-goods be found? When echo is too manifest, and the building is largely utilized for the performance of music, we commonly find that attempts are made to lessen it by using drapery. An interior designed by the architect to show off its noble proportions, or enriched by the frescoes of some Royal Academician, or embellished by beautiful marble panelling and mouldings is thus ruined. For the right interpretation and appreciation of orchestral music it is absolutely essential to stifle echo at its birth. We should hear only that which proceeds direct from the executants to our ears, and the harmony should not be disturbed by the reverberation of the musical notes from side to side of the building. It is to be noted that intensity of the sound is not the leading factor in such a case

as this. If a little water be violently thrown on to the surface of a smooth-faced wall it glances off, and the same thing will happen with a large quantity; on the other hand, if either the large or small quantity be thrown on to a wall having a porous surface much in either case will soak in. And so it is with sound. If the grand interior which we have just been alluding to were constructed of porous clay-goods, the architect, the Royal Academician, and the embellisher still have their chance, and the drapery could be done without.

We do not ask modern artists, with all their facadic and æsthetic ideas, to succumb to science or to pander to the worker in clay, but we are perfectly justified in reminding them that many of the ancient works of art which they all but worship are the work of clayworkers. They seem to forget this. Their ideas are confined (like the latest craze in art) in straight lines and angles; they have set up for themselves a certain number of cast-iron regulations, which may be likened unto the by-laws of a County Council. They can see art in ancient clay work, but not in modern, that is because they have moulded themselves into that train of thought. Once get rid of that, and we can furnish both the artist and architect with materials such as the ancients had in the interior of their buildings, which were then, and are now, in many respect acoustically perfect, which were then, and are now (in ancient structures) admired for their artistic beauty.

We have said that clay work is often superior to wood work for acoustic purposes; we will substantiate that point by referring more particularly to the merits and defects of both for the uses named. Let us begin with wood. Here we have a material with a fiber; we cannot get wood without fiber. Fibers act as wires and are conductors of sound like the water. Consequently if sound strikes a match-board surface, much of it is immediately given a biased direction in the direction of fibers. This bias is useful when the wood is to act as a species of sounding-board, but when echoes are to be minimized (as is more frequently the case) it is to be deprecated. Wood with knots is better as retarding the propagation of sound within the fibers, than is wood with straight fibers.

But for sound-proof walls, if wood is to be employed, it has to be cut in such a way as to make the general construction somewhat expensive. Now all this can be done away with if such a material as terra-cotta be employed. The velocity of sound in a body is a fair index of the use of that body for acoustic purposes. As would naturally be supposed, the velocity is not so great in loosely compacted materials as those more closely aggregated. If the object in the wall be to stop sound from going through it, then it might be lined with exceedingly porous terra-cotta. If on the other hand, the surface is to be of neutral character, terra-cotta, with a "semi-vitreous" face is more suitably employed. If, as in many small country churches, the upper parts of the wall above the dado are to be left bare, the brick showing should always have a fairly hard surface so as not to soak in the sound too much. But, for a church having a central dome, underneath the center of which the pulpit is to be usually placed, the interior of the dome if left bare (commonly the case with small churches) should be

made of strong rubber, and we should not object to the light porous kieselguhr brick for such a purpose.

It may be taken for granted that the velocity of sound is greatest in hard brick, such as ruabon-red, metalline, hard blues, firebrick and stocks and least in gaults, ordinary red, and sand rubbers. To recapitulate, therefore, the former class should be employed for conducting and reinforcing sound, and the latter for the reverse as sound-proof materials, and in stifling echoes.

Majolica and faience, when used in broad and flat surfaces, must increase echo, and when used very thin must be fairly resonant; when much broken up, however, either by frequent jointing, or when projecting in pattern, sunk or raised, its effects must be mainly of a neutral character.

The problem of the obnoxious party wall may be readily solved by using soft brick jointed with good mortar, taking that the wall is solid throughout; the difficulty of noise in flats from one floor to the other might be very considerably done away with by using majolica and faience ceiling mouldings for all angles, and by constructing the face of the wall of the porous brickwork, faced by plaster of a more or less porous character. Sound reflectors for public buildings, not for reinforcement of sound, but for giving it direction, would be more suitable when made of porous earthen ware, and this would be much less unsightly than metal reflectors and tubes.

In short, the capabilities of clay goods in the directions indicated for assisting and modifying sound, are much more worthy the attention of architects than has hitherto been thought; less worthy materials have had a long trial, now give "brick, tile and terra-cotta" a better chance.

#### FEDERAL BRICK CO. ALL O. K.

Virgil M. Palmer, secretary of the Federal Brick Company, has returned to New Britain, Ct. from Providence, R. I., whither he hastened upon learning of the embarrassment of the Union Trust Company of that place. The Federal Brick Company will keep up its contracts and will not be affected by the embarrassment of the trust company. The trust company has been one of the backers of the Federal Brick Company and much interest has been taken in Connecticut in the situation ever since the news of its financial difficulty. In addition to the keen interest of the brick men in the institution is that of a few others who have carried an account with it or have deposits in its savings bank department. Many of the brick men hold paper of the Federal Brick Company drawn on the bank. By their contract with the Federal Brick Company their brick are paid for as they are burned with drafts payable sixty days from date. How much of this paper the local brick men hold Secretary Palmer would not say, but made the assertion that it would all be taken care of and that the trust company's embarrassment would not result in the dishonor of any of their drafts. The dullness of the brick season this year has caused much apprehension among the brick makers in the combine, lest the company should be unable to pay for all their brick as agreed. It has bravely faced the difficulties of a dull market so far.

### CONDUITS MADE OF CLAY AND LAID CAREFULLY IN CONCRETE HAVE PROVED THE MOST SATISFACTORY

In a paper read at a recent meeting of the Engineering Association of the South, considerable information was given concerning the materials and methods employed in laying underground conduits for electric wires. The kinds of conduits in use the author divided into three classes—first, conduits of vegetable materials; second, conduits of metal material; and third, conduits of silicious material. In the first class are the Valentine creosoted box; the Wyckoff creosoted tube or pump log; and the paper or fiber conduit. In the second class are the Johnston sectional cast iron conduits; wrought iron pipe laid in hydraulic cement; wrought iron pipe laid in asphalt cement; cement lined wrought iron pipe; and steel or wrought iron laid in earth. In the third class are the Dorsett conduit, a combination of coal tar, pitch and gravel; the Lake conduit, terra cotta sectional; cement and stone conduit; vitrified clay conduit, both multiple and single.

Those most commonly used at the present time are single or multiple clay, fiber or creosoted wood, all of which are considered good and the choice between them is largely governed by considerations of cost. However, in localities where much water has to be contended with, creosoted wood ducts are most practical; while in streets crowded with underground pipes and which are likely to be frequently disturbed the single clay tile should be laid. The cheapest form is multiple tile laid similar to drain pipe without special foundation. Bare iron and steel pipes are subject to electrolysis.

In Nashville, single clay tile is laid in a matrix of cement upon a foundation of at least three inches of concrete and covered on the sides and top with the same thickness of concrete. This is considered by some the highest type of conduit. Its flexibility in winding around and over pipes in congested districts makes it the most desirable system, generally speaking. An additional precaution against damage by picks and shovels is furnished by laying a creosoted plank on top of the completed conduit. In Evansville, Ind., multiple tile is used. The joints of this tile are made rigid by the use of dowel pins. After the ends of the tile have been fitted together, a narrow strip of burlap or muslin is wrapped around the joints and covered with cement. This class of duct is sometimes laid without concrete, but preferably is given an entire concrete encasement. A method which has been proposed is to place concrete over the top and partly down the sides, only, giving a cross section like an inverted U; this being supposed to act as a beam to prevent settling.

Fiber conduit is laid in several different ways. One method employed in Nashville is to set forms in the excavation, place the bottom and side concrete in position before the fiber is placed, afterward filling the entire space between the side walls and around and between the fiber ducts with cement grout, the top being covered with concrete. In placing the fiber ducts, they are separated both vertically and horizontally by thin strips of wood which permit the cement grout to flow between them. A more common method is to place the ducts from one-half to three-quarters of an inch apart, in courses, and fill between them with con-

crete made of thin crushed stone, a coarse concrete being used for the outside encasement; the whole conduit being built up in layers. In either case the best results are obtained by dipping the spigot end of the fiber in hot jointing compound before coupling.

Creosoted wood duct is generally laid without any special foundation, and is usually covered before refilling, with a creosoted plank. The spigot ends should fit tight, but not to such an extent as to split when driven home. This class of duct is specially recommended where there is fear of trouble from future blasting or where the soil is so wet as to make concrete construction difficult.

Manholes, handholes and surface boxes are made in various forms, although in telephone work they are standardized both as to shape and size. Some engineers prefer rectangular holes, others round ones. Handholes or "surface boxes" are usually made very small. The depth or head room of an ideal manhole is six feet, although conditions such as drainage often necessitate less. While this head room may seem unnecessary, since most of the work in manholes, such as splicing and testing cables, is done in sitting posture, on the other hand rodding or pulling in cables is done best standing.

The materials for manholes and handholes may be brick walls and roofs, concrete walls and roofs, or brick walls and concrete roofs. In cities where water, gas, and other pipes are numerous, brick walls are generally preferable, since they make the form more readily adaptable to conditions, can be built around the pipes, etc. Brick, when used for roofs, is usually supported by I beams. The duct may end flush with the inside of the manhole walls, but in many cases is recessed in the walls, the edge of the recess being round, or round-nosed brick being used, to prevent tearing of the cables.

In jointing tile conduits, cement frequently works through to the inside. To remove this the mandrel is used. This consists of two round pieces of wood, each two feet long, their diameter being one-half inch smaller than the conduit. These blocks are coupled together, a handle being fastened to one end of the front block for drawing it forward and rubber washers being placed on the back ends. The mandrel is drawn through the tile for removing the cement, and after the conduit is finished it is tested by drawing through it a hard and wood mandrel fitting the tile reasonably close.

Underground wires are placed in lead covered cables containing from 200 to 600 pairs of conductors. The rope used to draw the cable into the conduit is threaded through by means of jointing rods similar to those used for cleaning sewers, which are pushed from one manhole to the next. The reel containing the cable is placed over one manhole, and a capstan or windlass with the necessary pulleys and braces at the next manhole. Electric motors, gasoline engines or horses may be used for drawing the cables through. Each section of cable is tested and then connected to the one previously laid in the adjacent section.

The National Association of Manufacturers of Sand-Lime Products will hold their fourth annual meeting in the German Room at the Chittenden Hotel, Columbus, Ohio, December 4, 5 and 6th. Further particulars regarding the meeting can be had by addressing the secretary Harry de Joannis, 45 Plymouth Place, Chicago.

# **CRAZING OF GLAZED CERAMIC PRODUCTS**

By, Karl Langenbeck, Ceramist.

From *Architecture*, October, 1907.

The phenomenon of the cracking of the glaze on pottery products is one which occasionally comes under the eye of the architect.

In the case of various toilet appliances, the phenomenon is urged as directly objectionable because through these cracks in the glass covering the surface liquids might enter the body of the ware, which is never absolutely impervious to absorption. The penetration of liquids through the cracks or crazing of the glaze is, however, far less common than is supposed, in those larger appliances which the architect specifies, and with which alone he has to deal. It is comparatively seldom therefore that discoloration to any noticeable degree takes place in the body of such wares, because these cracks are so extremely close that capillary attraction of the liquid is only possible if in some way the piece becomes quite warm while the liquid stands over the crazing.

In pottery dishes of domestic use, the conditions are quite different, because these are frequently plunged entirely into hot water for the purpose of washing, which does open these cracks to a minute degree so that the dirty water enters by capillarity, and in the course of time stains the body with dark markings.

It may further be stated as a matter of moment to architects in reference to the possible absorption of organic liquids through such crazings, that this is never attended with the production of a disagreeable odor by the ware. Any odor which such vessels give in the course of use is entirely superficial, and can absolutely be removed by perfect cleansing and application of antiseptics. The reason why ware was purposely strongly impregnated with organic liquids through crazing of the glaze, does not smell, is because odor is solely the accompaniment of fermentative decomposition, and the separation of the glaze surfaces in these cracks is so minute that not even the smallest micro-organisms can pass through them in the capillary suction of the entering liquid, but the cracks act as filters leaving the germs on the surface, while the liquid passing through is absolutely germ free.

As architects are subjected to a good deal of argument in the interest of trade about this subject, and as the quantity of counsel given has darkened judgment, it seems desirable to state the unbiased facts. Of course, a crazed glazed product lacks technical perfection and may as such occasionally offend the eye. But the writer only knows of one use in which any offense of this kind is at all marked, and that is where such glazed products are strongly bespattered with dark colored lubricating oils, as for instance in a white tiled waisteoting immediately behind the crankshaft of an engine. Such oils are absorbed much more strongly by glaze products than watery solutions, and crazed lines in the glaze become conspicuously noticeable owing to darkening the body beneath.

Concerning the origin of the phenomenon "crazing" there is this to be said, it is due to a difference in the expansion of glass and of clay ware, and as the glass or glaze is fused to the surface of the clay body and cannot get away by pushing off or lifting, it parts or cracks. It is possible to correct the greater expansibility of the glass, by making it more infusible through the addition of clay and sand, by which means its expansibility can so far be reduced that the contrary phenomenon of "crazing," namely, the pushing off the glass from elevated or rounded parts of the ware takes place, a phenomenon which is called "shivering."

This defect is never seen in the trade because it takes place immediately upon drawing the ware from the kiln, and such ware never enters the market.

Because there is a correction for crazing due to the difference in the expansion and contraction of the glaze and the

body, this defect is now not a common one where pieces are entirely covered with the glaze. Only where this is not possible on account of some other demand which is made on the piece, can such a correction not be applied to the glaze to the extent of making it completely and continuously perfect. This is the case in glazed tiling.

The unglazed baked tile has affinity for Portland cement, and enters into chemical combination with it. On this account it is necessary in the case of glazed tiling to leave the surfaces which come in contact with the cement in setting, uncovered by glaze to effect the most perfect bond. The latter can be as perfectly corrected to correspond with the coefficient of expansion of the body as in the most perfect piece of glazed pottery or porcelain of any other type. But this expansion of the clay body is altered from its natural conditions by the entrance of moisture, and particularly through the entrance of crystallisable salts, through capillary pressure. Now every Portland cement contains more or less of these water soluble salts which are absorbed in setting the tile. In spite of the careful adjustment of the glaze to the body, they cause it to craze. In this case the action is not subjected to any regular laws, but depends upon the fortuitous way in which the salts have been lodged, and therefore there is no possibility of providing against its taking place absolutely, and it is for this reason that no honest manufacturer of a partly glazed ware, in which the unglazed parts come in contact with Portland cement can give a truthful guarantee against this technical defect.

There is only one condition under which it may not occur, and that is in the case of wares which have been burned at an extremely high heat with glazes that are very difficult to fuse. The general objection to the adoption of such ware is the fact that for tiles, which as flat wall coverings are required to be of reasonable uniformity in tint and accuracy in shape, the variation of the individual pieces is so great that the uniformity in shade and size which is commonly required by architects, is not commercially attainable, particularly as the result of absolute freedom from crazing is not completely certain.

Colored glazes cannot be obtained under these conditions at all because the tints are destroyed by the high temperature. There is an impression among architects that when there is a cracking or crazing of the glaze, there is danger that in the course of time the glaze may come off the surface. For this fear there is absolutely no foundation. There are innumerable examples of crazed glazes on pieces contained in museums and set in cement in their original position as much as 2,000 years old; and never in one single instance has the glaze come off of the piece to which it is fused. Such a phenomenon is only possible in the over corrected glaze shivering, as explained above, and such a glaze cannot from its very nature craze. For this reason, an absolute guarantee of such a danger is assured and attested by every historic instance.

## **FIRE PROTECTION FOR NEW YORK CITY STREET RY. CAR BARN**

The O. J. Childs Co., of Utica, N. Y., are making shipment of the second carload of their extinguishers, which completes an order for 375 "Childs" extinguishers for the Metropolitan Street Railway Co., of New York City.

They also report they are now making up 200 "Childs" extinguishers on a contract for the Department of Public Charities, New York City.

They have also recently furnished for the Panama Canal Commission 500 of their "Childs" extinguishers.

The above orders speak highly of the quality of extinguishers they manufacture.

### THE COMBINED SAND AND CLAY MIXING MACHINE

In the first issue in August of the Clay Record we described for our readers a new Automatic Side Cut Brick Cutter that had just then been brought out and thoroughly tested for the clay workers of this country by the well known Chambers Bros. Company, 52nd below Lancaster Ave., Philadelphia, Pa.

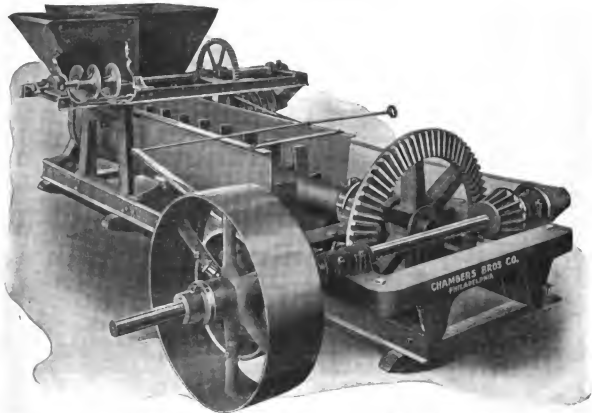
This Automatic Cutter has proved to be just what was intended and expected of it by its manufacturers and is now meeting with great success as is generally the case with the Chambers Brick machinery.

The latest improvement in machinery is the new Chambers combined sand and clay mixing machine, which we here illustrate for the first time to our readers. This machine accomplishes a much desired object in clay preparation.

The whole machine is very substantially built, the main gear frame being one solid casting and mounted upon a frame work of steel channels. Driving shaft is 2-15/16 inches in diameter, with friction clutch pulley 40 inches diameter by 12-1/2 inches face. Unboxed weight about 9200 pounds.

The machine may be used not only for sand but to feed exact proportions of coal dust, ground calcined clay, coke, or any finely divided dry material which it is desired to mix with some plastic mass.

If you are having trouble with your mixing apparatus or are considering the putting in of a new one in some future day, it may be well for you to get further particulars regarding the above described machine. Chambers Bros. Company, Philadelphia, Pa., are always glad to communicate with those interested.



CHAMBERS BROS. CO. COMBINED SAND AND CLAY MIXING MACHINE

In this machine there are 2 feed hoppers, the larger one for clay opening directly into the main cylinder or tub of the Pug Mill. The sand hopper adjoining, has a semi-circular steel bottom in which is placed an iron conveyor arranged to discharge from its end at a point well within the side of Pug Mill tub. The hopper may be filled with sand and so long as there is sufficient quantity to cover the conveyor there will be an exact amount fed into the pug mill where it falls directly upon the clay.

The mixture of sand with clay thus commences immediately at the entrance end of the pug mill tub. The sand conveyor is driven through the medium of a spur gear and pinion. Upon the pinion shaft is secured a five step cone pulley, so that by shifting its belt from one step to another a wide range in the proportion of sand to clay is easily obtained. In addition to this the knives in the pug shaft of the mill are adjustable as to pitch.

### LACK OF CARS PREVENT ORDERS BEING FILLED IN SOME SECTIONS OF THE STATE

A letter received by W. S. Blatchley, Indiana state geologist, states that the clay workers in some sections of the state are rushed with orders and are unable to keep up with them because of a shortage in cars. D. N. Lanyon of Hillsdale writes the geologist that the car shortage is the only drawback in his locality. Hillsdale is admirably suited to the clay working industry, according to Mr. Blatchley, because of the adaptability of the soil in the surrounding country.

"If we could get more cars," writes Mr. Lanyon, "other clay industries would locate here. I had everything arranged with two large clay product concerns to locate here but the poor car service on the railway scared them out."



### SOME SUGGESTIONS MADE TO WORKERS IN BRICK

The majority of engineers and some builders frequently leave the question of bond in brickwork to the unhampered choice of the working mason. Such casual proceeding, says Indian Engineering, is seldom attended with any serious risk in case of walls whose thickness is the length of a single brick, for here the bricklayer will be pretty certain to adopt either the Flemish or the English bond, both of which are unobjectionable in the majority of cases, though the latter is distinctly the sounder arrangement. When, however, as is the case in the majority of works which engage an engineer's attention, the thickness much exceeds that of a single brick, consequences of such neglect in detail are frequently deplorable. We have seen large masses of brickwork—notably in lock walls—consisting of nothing but headers, if we except those stretchers which appear on the exposed face of the wall and which, of course, occupy but a minute fraction of the wall's cross section. Such a structure, if we ignore the adhesion of the mortar, has but little more longitudinal strength than has a huge fagot of short sticks without that string which is usually provided by the woodcutter.

It is scarcely surprising, therefore, that the majority of such walls develop transverse cracks, even when they are exposed to nothing more in the way of bending moment than is incidental to ordinary careless construction.

The main desiderata of a good bond are three—(1) The bricks should overlap in each direction an aggregate extent which is approximately proportional to the bending moment or shearing stress to which the wall may be exposed in that plane; (2) the bond should not necessitate the cutting of bricks; (3) it should be applicable to walls of all thicknesses and yet sufficiently simple to be easily learned by the ordinary bricklayer. The "Habri" bond pre-eminently satisfies all these requirements; the first two demonstrably, and, concerning the last, we have never met a master who did not readily comprehend the system as soon as it had been illustrated in his presence by the piling of a few dry bricks.

In the Habri bond every course in a wall of indefinite thickness is essentially identical with every other course, and consists of a cycle of three rows of bricks—two rows of stretchers followed by one row of headers. This arrangement in each course is, however, shifted half a brick in a direction at right angles to the rows, as compared with the course upon which it rests, the direction of the shift remaining constant throughout the wall's height. When, under the above clause of this rule, a row of headers would be divided by the plane of a face of the wall, a row of half bricks is not inserted, but a row of stretchers substituted.

In the case of a wall half a brick thick this bond necessarily reduces—as do all other bonds—to a wall consisting of stretchers only. When the wall is one brick thick we have one course of headers only, followed by three courses of stretchers only; the arrangement being here identical with common English bond, which is undoubtedly the soundest arrangement in a one-brick wall under ordinary circumstances.

It is, however, in walls exceeding one brick in thickness that the value of our systematic rule becomes evident. Start-

ing from the face an arch abutment of indefinite thickness would have in its first course one row of headers, followed by two rows of stretchers, and so on. The second course would show one row of stretchers, followed by one row of headers, and then two rows of stretchers, the last three rows being repeated indefinitely. The third course would consist of two rows of stretchers, followed by one row of headers, and so on. The fourth course would have three rows of stretchers next the face, followed by the usual cycle of one row of headers and two rows of stretchers. This completes the cycle of courses, the fifth course being identical with the first not only in arrangement, but also in horizontal position. In the case of a wall under a vertical load, the direction in which the half-brick step by which each course has its arrangement shifted as compared with that of its predecessor is made has no importance, though of course it should remain unaltered throughout the wall. When, however, the wall is exposed to an inclined thrust it is preferable to make the shifts as you ascend in the same direction as the thrust. Thus in an arch abutment the shifts are made from the face; in a revetment wall toward it.

The name Habri is that of a distributary channel upon which the bond was first employed some twenty years ago.

### NEARLY READY TO START NEW AKRON PLANT

Within the next week operations will begin in the manufacture of sewer pipe in the mammoth new plant of the Robinson Clay Products Co., in East Akron, Ohio. The finishing touches to the building and kilns are now being made and the machinery used in the manufacture of the company's products is being placed in position.

This new plant is said to be the largest of its kind in the world, with a capacity greater than that of the American Sewer Pipe Co., at Barberton. It is located on the Metzger farm along the Valley railroad, and the work of its construction was begun nearly two years ago.

The dimensions of the main building are 462 x 100 feet, and four stories in height. It has been constructed at a cost of over \$25,000. It will be equipped with the most modern machinery made in the manufacture of sewer pipe. All of the machinery is being installed by an Ohio firm. In addition to this there has been installed a 450-horse-power Corliss engine.

All of the machinery will be operated by electric power, and there will not be a belt or shaft, except in the engine room, where the power is generated, in the entire plant.

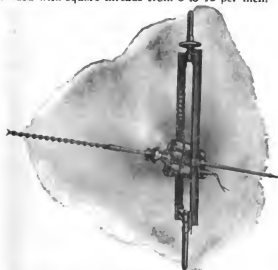
Hunt & Wigly, local contractors, had charge of the brick work in the walls, the 18 kilns, and two large smoke-stacks. The Burgner Iron Co., did its own plumbing, its master mechanic, Geo. Mitchell, having charge of this. All of the electrical apparatus, motors, etc., has been supplied by the Westinghouse Co., of Pittsburgh.

There are 18 large kilns built to burn the sewerpipe. All are of the down draft pattern. In addition to this there will be a machine shop, blacksmith shop, and repair shop. The clay to be used in this plant is to be secured from two large beds or deposits on the Metzger and Sumner farms, which the company has acquired, covering an area of about 60 acres. All grades of pipe, from four to 36 inches, will be turned out. The company will employ nearly 500 men when it runs full capacity.

### THE JEFFREY ELECTRIC DRIVEN AUGER DRILL

The Jeffrey Manufacturing Company of Columbus, Ohio, have for a long time been building electric driven auger drills for use in coal mines, and have recently brought out a heavier type, as shown in the accompanying illustration, and known as the A-5 drill. This drill is to be used for drilling gypsum, fire clay, rock salt, and other material of about the same hardness.

The motor is of ample capacity to take care of the most severe service that he drill point will stand, and has a nominal rated capacity of 3 H. P. with a momentary overload capacity of from 6 to 8 H. P. The gearing may be arranged for auger speeds from 100 to 300 R. P. M. and the thread bar provided with square threads from 6 to 12 per inch.



The building of drills is only a small portion of the machines that are made and sold by the Jeffrey Company. They issue complete catalogues, on elevating and conveying machinery. Coal handling, coal mining, coal washing, coal and coke drilling. All kinds of conveyers, chains, crushing and pulverizing machinery, electric locomotives for mine and industrial haulage, are of electric locomotives, saw mill and lumber machinery, water elevators, power house equipments and drying machinery.

If you are interested in purchasing machinery in any of these branches write to them for their catalogue. They will honor your request by return mail.

### UNITED STATES GYPSUM CO. PAYS SHARE- HOLDERS IN STOCK OF LITTLE RAILWAY

An odd dividend announcement has been made by the United States Gypsum Co., which has declared a dividend of 2½ per cent payable in the stock of the Erie & Michigan Railway Co., a block of which is owned by the Gypsum company.

The Erie & Michigan Railway & Navigation Co., as its full title runs, operates 11 miles of railway as well as a fleet of steamers on the great lakes. It has an authorized capital of \$250,000. The United States Gypsum Co. has outstanding \$3,651,000 preferred stock and \$2,247,000 common. It was formed by the consolidation in 1901 of 35 producers of gypsum.

### SAND-LIME BRICK INDUSTRY IN 1906

The total value of the sand-lime brick produced in the United States in 1906 was \$1,170,005, an increase of 20 per cent over the value (\$972,064) in 1905. The value of the common brick made by this process in 1906 averaged \$6.71 per thousand, as against \$6.85 per thousand in 1905, while the front brick averaged \$10.42 per thousand in 1906 and \$11.02 in 1905. Almost 90 per cent of the product is marketed as common brick, a result that could hardly have been foreseen when the brick was first introduced into this country. The total number of plants has increased from 16 in 1903 to 57 in 1904, to 84 in 1905, and to 87 in 1906, and brick of this character are now made in nearly every State in the Union. New York is the largest producer, the value of the product in 1906 amounting to \$191,000; and Michigan, with a product valued at \$174,021, is a close second. California, Florida, Indiana, New Jersey, and Pennsylvania each produced in 1906 sand-lime brick to a total value of more than \$50,000.

The constitution of the binding material of sand-lime brick has been a mooted question. Some of the advocates of the new product have not only claimed that a definite lime silicate was formed during the process of manufacture, but they have also claimed, by implication at least, that the silicate investigation made during the past year by Frederick E. Wright in the geophysical laboratory of the Carnegie Institution of Washington affords conclusive evidence of the subject. At the request of E. C. Eckel, Mr. Wright, who is one of the very few investigators intimately acquainted with the lime-silicate series, examined with the microscope several specimens of commercial sand-lime brick. Mr. Wright states that the binding material in the specimens submitted to him is a hydrous lime silicate, formed by simple and well known reactions from lime and sand in the presence of steam. The reactions are, however, in no way comparable to those that take place during the process of Portland-cement manufacture, and the binding material is very different in composition and relationship from Portland-cement clinker.

As a result of this investigation Mr. Eckel, who has prepared for the United States Geological Survey the statistics of sand-lime brick manufacture in 1906, makes the following statement:

"It may safely be assumed, then, that a sand-lime brick as marketed consists of (1) sand grains held together by a network of (2) hydrous lime silicate, with probably, if a magnesium limestone were used, some allied magnesium silicate, and (3) lime hydrate or a mixture of lime and magnesium hydrates. These three elements will always be present, and the structural value of the brick will depend in large part on the relative percentages in which the sand, the silicates, and the hydrates occur."

An advance chapter from "Mineral Resources of the United States, Calendar Year 1906," on the production of lime and sand-lime brick in 1906, is now ready for distribution by the Geological Survey.

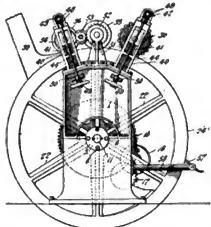
### THE ISENHOUR ELECTRIC BRICK

G. W. Isenhour, a brick manufacturer of Spencer, N. C., has perfected a new vitrified brick, which is made by a process known only to himself. The product is said to be of a very superior quality, being extremely hard and durable. The brick will be known as the Isenhour Electric Brick, and will be manufactured in large quantities when the power of the Whitney Company is available at the narrows on the Yadkin River.

# NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

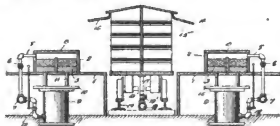
These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

864,104. Molding-Machine. Patrick L. O'Toole, Edwardsville, Ill. Filed Aug. 15, 1906. Serial No. 330,745. In a molding apparatus, the combination of a rotary mold drum provided with peripheral mold boxes, a hopper



for supplying the plastic material thereto, said hopper being arranged at one point in the path of revolution of the drum, a series of compression rolls arranged in regular order in close relation to the hopper to gradually and increasingly compress the material into the mold boxes, one of said rolls being driven by engagement with the drum, and means for positively driving the other rolls independently of the drum. 865,266. Apparatus for Forming Building-Blocks and Artificial Stone from Plastic Material. Albert A. Pauly, Youngstown, Ohio. Filed April 30, 1907. Serial No. 371,141.

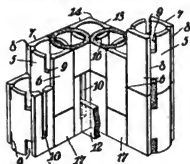
An apparatus of the type described consisting of supports, molding frames arranged upon said supports, doors normally closing said frames, ejectors located beneath said supports and extending into said frames, steam pipes connecting with said ejectors and with said frames, and means for controlling the operation of said ejectors.



Concrete block forming means, comprising a supporting platform, a plurality of molding-frames supported on said platform, a steam supply line beneath the platform, steam pipes connecting said steam supply line with each of said molding-frames, block-ejecting means for each molding frame comprising a cylinder located beneath the platform having a movable head, plungers carried by said head and projecting through the platform into the molding frame, a piston in said cylinder for engaging said movable head, connections between the cylinder and said steam-supply line, and means operated from the platform for controlling passage of steam from the steam supply line to said cylinder.

864,801. Wall and Block for Making the Same. Orlando Richards, Bristol, Wis. Filed Aug. 3, 1906. Serial No. 329,109.

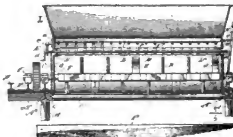
A corner block comprising a body portion having angularly disposed faces connected by a convex wall and provided with a vertical stop shoulders disposed at the juncture of said faces and convex wall, there being locking recesses formed in the convex wall at the opposite ends thereof.



A wall formed of a plurality of substantially cylindrical side blocks having oppositely disposed parallel side walls connected by convex end walls and provided with vertical stop shoulders disposed at the juncture of the side and end walls, there being locking recesses formed in the opposite ends of the convex end walls and interfitting with the walls of the recesses in an adjacent side block, and corner blocks each having angularly disposed faces connected by a convex wall, the convex walls of the corner blocks being provided with oppositely disposed recesses adapted to receive the convex walls of the adjacent side blocks, there being vertical stop shoulders formed on the corner blocks at the juncture of the convex walls and angular faces for engagement with the stop shoulders of the adjacent side blocks.

865,365. Mixing Apparatus. Chester T. Drake, Chicago, Ill. Filed Nov. 13, 1903. Serial No. 180,997.

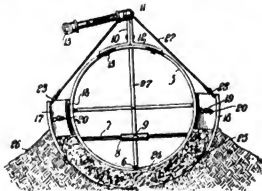
In an apparatus of the character described, the combination with a supporting framework comprising parallel side sills and transverse end sills, a mixing chamber located between and supported by said side sills, parallel rotary shafts extending through said mixing chamber, bearings for said shafts mounted upon said transverse sills, radial blades fixed to said rotary shafts, vertical brackets supported upon said parallel side sills between which the mix-



ing chamber is supported, transverse beams supported by said brackets above and at each end of said mixing chamber, a longitudinal shaft extending through and journaled in said transverse beams, downwardly swinging doors closing the bottom of said mixing chamber, flexible connections connecting said doors with the end of said shaft, means for rotating said shaft to lift said doors against the mixing chamber to close the same, a measuring box supported by said vertical brackets above said mixing chamber, a dumping bottom for closing said measuring box, a lever for opening and closing said dumping bottom pivoted at its lower end to one of said transverse sills.

865,968. Mold for Making Culverts, Conduits, and Similar Hollow Structures. Joseph Hickson, Mount Gilead, Ohio, assignor of two-fifths to Thad E. Buck, Mount Gilead, Ohio. Filed Apr. 30, 1907. Serial No. 371,103.

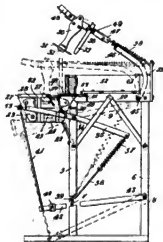
A mold including an expandible shell having its adjacent longitudinal edges over-lapped, means disposed within the shell for expanding and contracting the walls thereof, formers disposed on opposite sides of the shell and spaced



from the latter to form intermediate moulding compartments, adjustable spacing plates carried by the formers and bearing against the exterior walls of the expandible shell, a shaft journaled on the shell, and a flexible connection between the shaft and the longitudinal plates for raising and lowering the latter.

866,325. Brick Making Mechanism. Sidney M. Black, Bay City, Mich. Filed May 5, 1906. Serial No. 315,330.

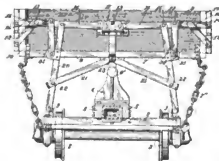
In a brick making machine, a frame, a plurality of laterally movable mold-sections, a yoke pivotally mounted on the frame for moving the mold-sections to operative and inoperative positions, and a spring connected with one end of said yoke for normally and yieldably holding the yoke in operative position.



In a brick making machine, a frame, a plurality of mold-sections pivotally mounted for lateral movement on the frame, a hopper slidably mounted on the frame and movable to operative position above the mold, a pivoted yoke for moving the mold-sections to operative and inoperative positions, a foot operating lever, a pivotal connection between one end of the yoke and foot-operating lever, a spring connecting the frame and the opposite ends of said yoke for normally and yieldably holding the yoke in engagement with the mold sections, and a tamping element pivotally mounted for swinging movement on the frame and adapted to enter the mold.

866,152. Dumping Car. Charles B. Peteler, Minneapolis, Minn., assignor to Kilgore-Peteler Company, Minneapolis, Minn., a Corporation of Minnesota. Filed Mar. 4, 1907. Serial No. 360,520.

In a dumping car, a truck, a car body adapted to be tilted thereon to discharge its load, and a side board for said car body, in combination with swinging supports for said side board, props pivoted at one end to respective swinging supports, and toggle levers, connecting said side board with

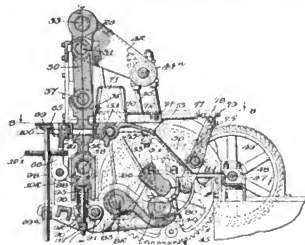


said props; the whole so arranged as to increase the angle between said swinging supports and said props, when the car is tilted, thereby straightening said toggle levers to turn said side board, substantially as described.

868,515. Brick-Machine. Bruce C. White, Chicago, Ill. Filed Feb. 23, 1906. Serial No. 302,614.

In a press, the combination of two opposed plungers, a toggle connected with said plungers, the connection between one member of the toggle and one of the plungers consisting of vertically-sliding side-bars, a lever attached to the middle joint of said toggle, a fulcrum for said lever mounted in fixed bearings in said sliding connection, and means for flexing said toggle by moving said lever, substantially as described.

In a press, the combination of an upper and lower plunger, a toggle, with the two members of which said plungers are respectively connected, a machine-frame comprising two side



portions, two gear wheels located in recesses in said sides of the frame, a shaft on which said gear wheels are mounted, a lifting lever adapted at its forward end to exert an upward pressure on said lower plunger, a cam on the central portion of said shaft adapted to bear on the rear end of said lifting lever, cranks on said gear wheels, connecting rods attached to said cranks, a bell crank lever connected to the said rods, said bell crank lever being connected to the joint of said toggles, and a movable fulcrum for said bell crank lever, substantially as described.

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Vol. XXXI. OCTOBER 30, 1907. No. 8

"I like to read American advertisements. They are to  
themselves literature, and I can gauge the prosperity of the  
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the  
very time that advertising should be the heaviest. Ninety-nine  
out of every hundred merchants advertise most when there is  
least need of it, instead of looking upon advertising as the panacea  
for their business ills.—John Wanamaker.

## CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick  
and Tile Association will be held at Des Moines, Iowa,  
January 22 and 23, 1908.

The fifth annual convention of the Canadian Clay Products  
Manufacturers will be held at Ottawa, Canada, November  
19, 20 and 21, 1907.

The fourth annual convention of the National Association  
of Manufacturers of Sand-Lime Products will be held at  
Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic So-  
ciety will be held at Columbus, Ohio, February 3d and  
4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving  
Brick Manufacturers' Association will be held at Columbus,  
Ohio, February 3d and 4th 1908. Headquarters at the  
Southern Hotel.

The twenty-second annual convention of the National Brick  
Manufacturers' Association will be held at Columbus, Ohio,  
February 3d to 8th 1908. Headquarters at the Southern  
Hotel.

The thirtieth annual convention of the Illinois Clay  
Workers' Association will be held at Peoria, Ills., Jan. 14-15  
and 16th 1908. Headquarters at the National Hotel.

Laziness is a habit that grows fast and clings close.

It is easier to learn some things than it is to unlearn  
them.

"Tradition and custom are two of the strongest forces  
that sway men."

Beware of the man whose debts don't worry him. He  
would steal your umbrella if he saw it in the vestibule of a  
church.

Get up the "copy" for the advertisement that you were  
thinking of sending in the Clay Record and mail it to us to-  
day. Tomorrow will never be here.

"The carefulness with which a successful angler selects  
his flies before he throws his line for trout is instructive.  
Nothing that is unnatural, or that differs from things as they  
are, does he tolerate. Just as much care should be given to  
the lines you throw forth in an advertisement."

Subscribe for the Clay Record today. Its cost will not  
break you.—Its only one dollar.—Twenty-four numbers for  
so small amount.—If you don't get value received during  
the year we will cheerfully refund the money. Remember  
it is the only Clay Journal in America that is printed twice  
a month. Just be good to yourself and subscribe.

CLAY SKY SCRAPERS ARE GREAT  
FIRE WALLS

Across the lower end of New York city the greatest fire  
wall in history is nearing completion. It will effectually  
cut off the financial district of the metropolis from the rest  
of the city in case of a conflagration.

Almost two blocks thick and hundreds of feet in height,  
this great unburnable barrier, roughly following the line of  
Liberty street, is formed by a chain of skyscrapers com-  
posed mostly of steel and hollow block of Jersey clay which  
have each been heated to a temperature of 2,000 degrees in  
the process of manufacture, and in their finished state as  
porous terra cotta are absolutely not burnable.

Beginning at the North river, the Central building, of 12  
stories, and the West street building of 23 stories, form  
the west end of the wall. Between Washington and Green-  
wich streets is a break, but it is more than counterbalanced  
by the Hudson Terminal building, between Greenwich and  
Church streets, and the Singer building, the highest in the  
world; the City Investing and the Trinity buildings between  
Church street and Broadway.

Crossing Broadway the fireproof wall is continued by the  
Broadway Maiden lane building, the Jewellers' building  
and the Provident Savings Life building. East of Nassau  
street are the Mutual Life Insurance building, the Contin-  
ental building, Royal Insurance building, Bishop building,  
International building and the Tontine-Tabor building, form-  
ing an almost unbroken line to Water street of structures as  
nearly fireproof as human art can build.

## OBITUARY

Henry Schrage, manufacturer of brick at Kansas City, Mo., died at his home, 500 Jackson Ave. He was 60 years of age and lived in Kansas City thirty years. The works are on 2d St., near Holmes St.

David A. Layton, a most prominent brick manufacturer of Marion, S. C., the owner of brick plants at Florence, Layton, Mullins, and Pedee died at his home of Typhoid Fever. He was 46 years of age and leaves a wife and six children.

William C. Brush, a pioneer of Buffalo, N. Y., died at the family home, 171 Woodward Ave. He was 88 years of age. He was the organizer of the brick works known as Brush Brothers, which was started in 1842, and with his three sons was actively engaged in same at the plant on Bailey Ave.

James Fox, vice-president of the Collingwood Brick Company and a resident of Toledo, Ohio for forty years, died at the Toledo Hospital from a fall that he sustained about a month ago. He was sixty years of age. His sons James E. and George H. were connected with him in the business.

## ACCIDENTS, DAMAGES AND LOSSES

Will Nisbett, an employee of the Barton Lumber & Brick Co., Jonesboro, Ark., had the misfortune to lose four of his fingers by getting them caught in a saw.

Paul Bucile, an employee of the Hecla Portland Cement Works at Hay City Mich., was killed by a cable breaking and letting tons of gypsum fall upon him.

An involuntary petition in bankruptcy has been filed against the Boyds Hill Brick Co., Pittsburg, Pa., among the claims filed was one of Booth & Flynn Ltd., for \$9,000.

At the plant of the Bradford (Pa.) Pressed Brick Co., Joe Constanto's right arm was drawn into a large cog wheel and injured so it had to be amputated above the elbow.

Joseph Kochnowski, a Springville laborer commenced action against the Springville Brick Co., Detroit, Mich., for \$10,000 damages for being seriously injured by a brick kiln falling on him.

Nick Birills, an employee of the Indiana Run plant of the Suburban Brick Co., Bellaire, O., was severely injured by the falling of clay onto him. The scalp was laid open to the skull and sewed up by the doctor.

The Piedmont Brick & Coal Co., Piedmont, W. Va., is in the hands of a receiver. This was done so the plant can be sold and a clear title given. The court has ordered the receivers to borrow \$2,000 to rehabilitate the plant and start it going.

The Universal Cement Brick & Block Co., manufacturers of cement brick and blocks at 200th St. and Webster Ave., The Bronx, New York, has made an assignment to Edward Michling. William E. Welch is president of the company and W. J. Leiberts secy. & treasurer.

Benjamin Watkins has filed suit against the Clay Center (Kansas) Pressed Brick Co., for \$5,000 damages, alleging the company to be responsible for his injury received while at work, resulting in the loss of his left foot, caused by climbing on the machinery to oil a portion of it.

## FIRE! FIRE! FIRE!

The Hancock (La.) Tile Works was burned to the ground last week. It was one of the largest industries in Kossuth county.

The Slidell (La.) Brick & Tile Works suffered a loss by fire of several thousand dollars by the frame work around the kilns burning off.

Fire destroyed a part of the plant of the Edward F. Day brick works at Danvers, Mass. The loss will amount to \$4,000 fully covered by insurance.

The two story office building of the Kittaming Brick & Fire Clay Co., at Wicksboro, Pa., recently erected by the company at \$5,000 cost was completely destroyed by fire.

The loss by fire at the plant of the Spears Brick Co., on buildings, carts and machinery at Madison Av. and 136 Street, New York did damage to the extent of \$9,000, fully insured.

## RAILROAD WANTS RATE ON BRICK INCREASED

Atlanta, Ga.—A petition filed by the Western and Atlantic railway asking that the rate on brick from certain points on its line to Atlanta be increased from 2 to 3 cents per hundred pounds was the subject for discussion before the railroad commission yesterday, and the hearing was postponed indefinitely. The railroad contends that the 2-cent rate is too low and that the 3-cent rate once approved by the commission should be made effective. A number of brick manufacturers attended the hearing and entered a protest against increasing the rate, asserting that it would put them out of business in competing with Atlanta manufacturers.

## SCARCITY OF BRICK IN COLUMBUS

Columbus, Ohio has been suffering from a brick famine all summer and even with the coming of fall and the usual slackening in building operations there is no relief yet in sight. Leading contractors say that it requires about 50,000,000 brick to supply the demand in Columbus in average years and the demand this year has been above the average.

The manager of a company which supplies about 8,000,000 brick yearly to the local trade, said that he had been behind with orders all season and had been compelled to get brick wherever he could to fill orders, in many instances shipping them in from a distance. There is no lack of brick-making clay around Columbus, but the majority of the builders say that the city has outgrown the facilities of the local brick manufacturing companies.

All of them have operated steadily the last year, but have been unable to supply the demand, which has been much heavier than last year. In September alone the amount of building in Columbus was 41 per cent in advance of that of the corresponding month of last year. As a result of the shortage in brick, building operations in Columbus have been retarded and many contracts put behind for weeks. No relief is to be seen for this season, but there is talk of several new brick plants being put in operation in this district next year.

Leading brick men say that the local supply of brick was fully 30 per cent short of the demand this season.

### LARGEST KILN OF BRICK BURNED BY THE COMPANY

Almost 18,000,000 brick have been made in Grand Forks, N. Dak., during the present season. This is more than were ever made in the city in any season before, according to a statement made by A. I. Hunter, president of the Red River Valley Brick corporation, and represents the largest business handled by any brick concern in the history of the northwest.

"We are just about finishing up the year's work, and are very well satisfied with the year's business." "Our sales have been very satisfactory, in deed, but we are carrying over to next season the largest quantity of brick ever carried over winter.

"We are burning now in the old Bartholomew yards, in the south end of the city the largest kiln of brick ever burned there since the yard was started some twenty years ago. The kiln contains 1,100,000 brick, and requires the labor of 16 men day and night for six or seven days. It consumes about 65 cords or seven carloads of wood daily, costing at present prices \$360 a day.

This yard has made a good many brick since it was opened by Mr. Bartholomew, averaging about 3,000,000 brick annually, nearly all of which have gone into buildings in Grand Forks. The present kiln is the last that will be burned there, and the equipment is already being taken down and removed to the north end of the city, where it will be consolidated with that of the Poupore yard, now owned by the Red River Valley Brick corporation. I have sold the place and also my farming equipment.

"Although the cost of making brick, owing to advanced prices of wood, labor, etc., is at least \$1 per thousand more than it was a year ago, our prices are still the same as they have been for the past five years. Our business is steadily expanding and we have shipped brick this season as far as Winnipeg to the north, Superior on the east, Cut Bank, Montana, on the west and to Aberdeen, South Dakota, on the south.

"We are somewhat conservative about introducing new machinery since our experience a year ago with the new faugled down draft kiln, which proved a complete failure, at a cost of \$6,000 to us.

"However, we have sent away three carloads of our clay to ascertain what results they would give in making sample hollow brick and tile, and the results have been so satisfactory that we shall probably add a plant for the manufacture of these goods next season, although the demand is not very extensive in our territory.

### A LARGE BRICK COMPANY FOR ONTARIO

Papers of incorporation have been sought by local capitalists for the Western Ontario Brickfields, Ltd., London, Ontario, capitalized at \$100,000.

The provisional directors will be Dr. John D. Wilson, S. Frank Glass, Dr. Drake, C. B. Edwards, Chas. H. Ivey, Dr. J. E. Niven and J. Lewis Thomas.

The analysis of the clay which is to be used in the manufacture of the brick is reported to be equal to any in the old country.

Mr. Thomas leaves for England in a week in connection with the business of the company.

### SUB-BOARD OF APPRAISERS ALLOWS DISCOUNT ON LOW GRADE JAPANESE WARE

It was decided by sub-board No. 2 of the general appraisers at New York that American purchasers of cheap blue and white chinaware from Japan are entitled to discounts of 10 or 20 per cent upon merchandise entered into this country and found to be seconds or thirds respectively.

The test case, which was decided yesterday in favor of A. A. Vantine & Co., of this city, is of general interest to all importers of similar goods from the mikado's empire, and for this reason, the litigation which has lasted nearly a year has attracted general attention in the trade. The merchandise in question is known as "debands," and was bought at Nagoya. At the hearings of the issue before Eugene G. Hay, acting as a single reappraising officer, and later before General Appraisers Fischer and Howell, sitting as sub-board No. 2, it was shown that Vantine & Co., ordered upon a sample at an agreed price by piece or dozen. Porcelain firing in Japan is largely an empirical industry, not having been brought to the scientific perfection of the French, German and English potteries.

Because of this condition, the purchaser of Japanese porcelains must always anticipate the presence of a substantial number of defective pieces in his orders when delivered. The goods are therefore always bought subject to inspection. Some merchants agree to pay a fixed price for every merchantable piece, rejecting absolutely all pieces that are deemed not fairly merchantable. With other buyers the practice is to separate the orders when delivered into firsts, seconds and thirds. Such has been the practice of Vantine & Co. The seconds and thirds after an inspection by the manufacturers are purchased at discounts of 10 or 20 per cent from the agreed price, which relates only to firsts.

Thus if Vantine & Co. import a cup and saucer at 2 yen a dozen, the price for seconds and thirds of that cup and saucer will be respectively 1.80 yen and 1.60 yen a dozen.

The local appraiser at New York questioned the correctness of this practice and for a year past advanced the values of seconds and thirds indiscriminately to the prices of firsts. Upon appeal to the board of appraisers last winter, the tribunal sustained the entered values of the importations then pending before it with one exception. The board declined to sustain the importers as to the cheap blue and white porcelains and held that the appraiser was correct in his contention.

Kammerlohr & Duffy, attorneys for Vantine & Co., advised the importers not to accept the board's decision as final, with the result that a new case was framed. In the new case, testimony of a convincing character was laid before General Appraiser Hay, who sustained the importers. The government then appealed to sub-board No. 2. John G. Duffy, of the law firm representing the importers said that no new testimony was laid before the sub-board, arguments being made upon the testimony submitted to Mr. Hay.

A receiver has been appointed for the Montello Brick Works, Reading Pa. This company is a subsidiary of the United States Brick Co., and is an operating company holding plants under a lease.

### ARRANGE FURTHER DETAILS OF COMBINING INTERESTS AND PLAN TRIP OF INSPECTION

Stockholders of the pressed brick plants in York, Pa., and county which are to merge their interests held a meeting in the offices of C. C. Frick & Co., in the Security, Title & Trust company building. Tentative plans for the combination were discussed and a committee appointed to visit the plants of the various companies to secure such information as will be necessary in effecting the merger.

Those present at the meeting were J. W. Kilgore, A. W. Sechrist, J. T. Kopp, S. F. Glatfelter and E. R. Hively, of the Hollywood Brick company; Lewis Ahrens, E. G. Quickle and W. G. Robertson, of the Ahrens Brick company, and George Motter and F. O. Metz, of the Drury Brick company. A letter regretting his inability to be present and requesting full information of any action taken at the meeting was received from D. W. Cox, of the Manchester Shale & Pressed Brick company.

The Stauffer and Stoney Brook plants, which were not represented at the meeting, are expected to participate in the combine and have been asked to send representatives upon the inspection trip. The five plants combined would represent \$200,000 capital and have a capacity of about 50,000 brick per day.

Mr. Motter, of the Drury company, gave an instructive talk at the meeting upon the success of day and night supervision of each plant and the adoption of economical methods.

Those who have been named as a committee to make the inspection trip are J. W. Kilgore, of the Hollywood company; E. G. Quickle, of the Ahrens company, and George Motter, of the Drury company.

### KENNEBEC, ON RESERVATION, ACQUIRING FAME BY REASON OF NEW FACTORY BEING ESTABLISHED

Industries are springing up out in the reservation towns west of the Missouri river in South Dakota, and a substance that was thought to be of little value even as farming land is being turned into a fine quality of brick. At Kennebec a new brick factory has been established and will be put into operation within a short time. The brick will be manufactured from the gumbo soil in its native state, with hardly any preparation. The tests that have been made from the gumbo have shown it to have the best possible qualities for producing a high class brick. The output of the company will at first be 60,000 brick per day, but it is the intention of the company to increase it to 200,000 in the spring. Building material is very scarce in that country and the new material will be a vast help to people on the reservation.

### TERRA COTTA MANUFACTURERS GETTING MORE ADVERTISING

Manufacturers of terra cotta are getting an advertisement for the durability of their wares from an unexpected source. An archaeological survey in Burmah has resulted in the discovery of terra cotta reliefs dating back to the eleventh century, with the material as hard and the modeling and inscriptions almost as sharp cut and clear as if made yesterday. Those ancient workmen knew a few things.

### BRICK COMPANY MAKES CHARGES IN APPLICATION FOR RECEIVER

The Drury Brick and Construction Company of York, Pennsylvania, instituted suit in Circuit Court, by Heuvel & Sauerwein, attorneys, for the appointment of a receiver to wind up the affairs of the Highland Contracting Company, the Baker-Millikin Supply Company and the Jesse F. Hampton Company, all three Baltimore, Md., corporations. George L. Mowen, of Baltimore, is also a defendant in the suit.

Mr. Mowen, the bill of complaints states, is one of the incorporators of the Highland Contracting Company, and is engaged in carrying on its business as well as the business of the other two companies, with offices in the Calvert Building. It is alleged that between April 23 last and July 17 the Drury company sold to the Baker-Millikin company several lots of brick, for which a balance of \$755.24 was due on July 17, which the company has been unable to collect.

It is alleged that Mr. Mowen and the three companies named "are engaged in a scheme to defraud their creditors by buying upon credit materials used in the building and construction business in the name of one of the companies and then turning them over to another of the companies for use in their various construction enterprises." The Baker-Millikin company, it is alleged, has no financial responsibility. Because the Drury company cannot have execution upon the other companies and because each of the companies has profited upon the credit of the others, the operation of the affairs of the companies is declared to be a fraud upon their creditors.

### ALWAYS MAKING IMPROVEMENTS AND LOOKING FOR BETTER THINGS

The American Clay Machinery company, Bucyrus, O., has installed two new machines in its offices which are expected to materially aid in getting the office work done. A new electric adding machine has been purchased and installed and in addition to this a new multigraph has been purchased which will print several thousand letters per hour. Both machines are the best of the kind to be secured and are a big addition to the office equipment.

Some improvements have also been under way in the shops. The floors of the recently completed erecting shop have been paved with brick and the workmen are now engaged in cutting a driveway which will lead into the east side of the erecting room and which is also to be paved with brick.

### INDEPENDENT BRICKLAYERS PROSPER IN CALIFORNIA

The Los Angeles (Cal.) Independent Bricklayers' Association is enjoying a prosperous period, and its membership has reached fifty-two skilled workmen who have thrown off the yoke of union tyranny. The independents are receiving the support of contractors and expect to do the work on the Federal building, the new gas plant and several other important structures to be begun immediately. Officers of the association say they have plenty of work in sight and could give employment to from twenty-five to fifty bricklayers right now, if they were available.



### OGDEN COMPANY WILL GET FULL INSURANCE

The jury in the case of the Ogden (Mich.) Sewer Pipe & Clay company against four insurance companies, which has been on trial in the district court for several days, returned a verdict for the full amount asked for by the plaintiffs in the action.

The insurance companies are the Royal Assurance company of Liverpool, the Colonial Underwriters of Hartford, the Phoenix Insurance company of Hartford and the National Fire Insurance company. Each of these held risks on the buildings and machinery of the plaintiff amounting to a trifle less than \$2,000. This, together with the interest to date as figured by the jury, amounting to \$8,303.80, was awarded to the pipe and sewer people. The defendants were also taxed the costs.

The works of the Ogden Sewer Pipe & Clay company, located on Thirtieth street and Pacific avenue, were totally destroyed by fire October 16, 1906. Since that time the insurance companies have refused to pay the amount of the risk. Among other things they claimed that the proof of loss was not filed within the stipulated time.

### THREW A BRICK AND KILLED HIS BROTHER-IN-LAW

Charged with killing his brother-in-law, Charles E. Lilly, 18 years old, Jacob Shuck, 35 years old, of Curtis Bay, Anne Arundel County, Md., is a prisoner at the Central Police Station until a jury of inquest determines in what degree he is responsible. Shuck, who is a foreman of the Chesapeake Brick Company and Lilly, who was a workman under his brother-in-law's supervision, had an altercation, and Lilly, it is said, cursed Shuck. The latter threw an unburned brick and struck Lilly on the head, knocking him into a pit about eight feet deep. Shuck picked him up, but Lilly was unconscious. Shuck and his wife, who is Lilly's sister, and Mr. John F. Schaeffer, Lilly's stepfather, carried the injured man into a wagon and drove rapidly toward the city. When the wagon reached the City Hospital and Lilly was laid on the operating table it was found that he had expired.

Shuck made no effort to evade the police and Shuck admitted throwing the brick, but said his brother-in-law had goaded him beyond endurance. At the coroner's inquest tonight Shuck will be represented by counsel, Mr. W. H. Lawrence, of Baltimore County.

### DEMAND FOR BRICK IS PHENOMINAL

Owing to the rapid advance in the price of lumber in the last few years A. A. Buckingham, manager of the Northern Pressed Brick Co., of Crookston, Minn., reports that the demand for brick has increased very materially, that he has been unable to fill all the orders for brick sent in. This season his company has manufactured one and a half million common brick and an equal number of pressed brick and at that the plant was being run at half capacity owing to difficulty encountered with the machinery. Most of this brick was shipped out to the towns and cities tributary to Crookston and the rest of it was used here. The Northern Pressed Brick Co., has obtained the contract to supply the state with its product for the construction of the boys' dormitory at the Crookston Experimental station.

### FIVE NEW STRUCTURES COST NEW YORK ENORMOUS FIGURE AND MADE FIRE PROOF BY CLAY

Eight hotels in New York cost \$50,000,000. With one exception, all built within the last five years, and that exception was only two or three years earlier. Latest of all is the new Plaza Hotel, at Fifth avenue and Fifty-Ninth street. Its cost was \$12,500,000. One suite is taken by a well-known financier at \$30,000 a year.

In building these hotels the most important pre-requisite was to secure the most complete protection against fire which modern science has developed. The floors and partitions therefore are built of terra cotta hollow blocks, which in the process of making have gone through a baptism of fire at a temperature of over 2,500 degrees hotter than any conflagration ever known.

The Belmont, opposite the Grand Central station, cost \$9,000,000 and, like the Plaza, has 800 rooms. The Ansonia cost \$4,000,000 and has accommodations for 1,500 guests. Together, the St. Regis and the Gotham, one on each side of Fifth avenue at Fifty-Fifth street, cost \$9,000,000, and have rooms for 800 guests. The Knickerbocker cost \$7,000,000, the Breslin, \$3,000,000 and the Astor \$6,000,000.

In contrast, as far as high prices are concerned, is the new Mills Hotel, at Seventh avenue and Thirty-Sixth street. This is for poor men and no room in it is higher than forty cents a day; the rate for most of them is thirty cents. There are 1875 rooms in this building. If they are all filled every night in the year—and that has been pretty nearly the case with the two older Mills hotels downtown—the annual receipts will be \$208,962.50, not including the restaurant receipts.

### DECISION ADVERSE TO HAVERSTRAW BRICK MEN

Justice Morschauer, Brooklyn, N. Y., handed down a decision on Saturday, Oct. 26th, in the action of the Village of Haverstraw against J. Esler Eckerson and others, brought to restrain the excavation of land adjacent to the streets in the village of Haverstraw so as to destroy the lateral support of the roadways. Some of the defendants demurred to the plaintiff's complaint and presented a number of important questions of law to be disposed of by the court. The principal one was that the complaint did not allege negligence in the excavation or manner of digging. Judge Morschauer has decided that any unlawful obstruction or interference with the highway is of itself a nuisance, and that negligence in the digging need not be shown, and the owner of lands adjoining a street or highway has no right to remove, by excavating on his own land, the lateral support of the highway to render it unsafe for travel. The demurrer is overruled with leave to answer on payment of costs.

The brick plant of Judge Jas. E. Romig, at Hillside, Montgomery County, Pa., (in the suburbs of Philadelphia) which was recently equipped by the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa., with their best and most modern Machinery and the "Martin" Patented System of handling and drying 40,000 brick daily, is now in operation, making and drying 40,000 Brick every day, and which plant is conceded to be the best, most complete and most modern in the United States.

## SAND OR LIME BRICK OR BLOCK NEWS

The Board of Trade at Palestine, Texas, are considering the building of a sand-lime brick plant at that place.

The Cement Tile Works at Bancroft, Iowa, burned to the ground and is a total loss. It is understood that the factory will be rebuilt.

The Warren Brick Co., Bainbridge, Ga., is the successor to S. J. Warren. They will rebuild the burned sand-lime brick plant. Plans are not yet made.

The Marysville (Yuba Co., Cal.) Sand-Cement and Brick Co., has been organized with a \$5,000 capital stock by Michael Reisinger, president, F. P. Kupser, vice-president, J. M. Morrissey secy., and J. P. Arnoly treasurer.

The American Sand-Lime Brick Co., Great Northern Bldg., Chicago, report several new contracts for complete plants, and will soon furnish our readers with views and description of one just being completed.

The Savannah (Ga.) Sand-Lime Brick Co., which operated in sand-lime brick plant near Eden, Ga., has been placed in the hands of a receiver. Barron Cater, cashier of the Commercial Bank has been named. Differences between the directors and the secretary-treasurer, Mr. G. B. Whatley caused the trouble.

Colby M. Avery, formerly the engineer of several of the largest Sand-Lime brick plants in this country has opened an office at 39 Cortlandt St., New York. He will make plans and design sand-lime brick plants independent of any firm or line of machinery. Mr. Avery's experience ought to make him a very safe engineer in this line.

W. T. Jay, Shellman, Ga., wants machinery for making cement tile.

The Gary Granite Brick & Stone Co., Gary, Ind., has been organized with \$75,000 capital stock. O. C. Borman and N. C. Kunert of Toleston are interested.

The Enamel Brick & Concrete Co., Seattle, Wash., has been incorporated with \$200,000 capital stock by Westley Compton, Jasper Compton, and George W. Bailey.

J. H. T. Martin, receiver for the Silica Block & Brick Mfg. Co., of Sewaren, N. J., sold the entire assets to the Boynton-Chambers Co.

The Illinois Granite Brick Co., has been organized at Chicago with \$250,000 capital stock. Incorporators are Oscar M. Steffens, Joseph A. Grober and Arnold D. McMahon.

The Fellers Stone Co., Roanoke, Va., has been incorporated and will manufacture lime, brick and concrete. E. B. Fishburn is the secretary and treasurer of the company.

Jacob Fostner, a mechanical engineer is endeavoring to interest Oshkosh, Wis. business men into organizing a sand-lime brick company.

The Universal Cement Brick & Block Co., Webster Ave., & 200th Street, New York, is in the hands of a receiver. Fred J. Phillips was appointed and an involuntary petition has been filed by creditors.

The Buffalo (W. Va.) Brick & Tile Co. has been incorporated with \$10,000 capital stock to manufacture cement blocks, drain pipes, tiles and sewer pipes. The incorporators are W. C. Nash, O. H. Hardy, E. D. McCoy, W. T. Johnson, of Buffalo and R. E. McCabe of Charleston, W. Va.

## The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

### CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc. are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

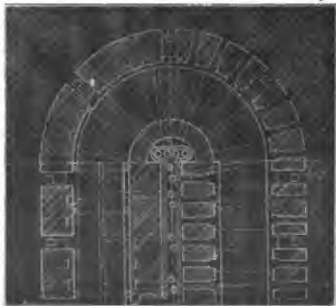
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



**WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.**

## MISCELLANEOUS ITEMS

The Columbia Silica Co., Portage, Wis., has been formed by A. J. Calkins, C. P. Jaeger and F. H. Runkel.

The Builders' Brick Co., Seattle, Wash., is building a two story factory on Ninth Ave., south.

A brick making plant is to be established near National Park, N. J.

The Sidney Brick & Tile Co., Sidney, B. C., is the name of a new company that will manufacture brick, tile, etc.

The Standard Brick Mfg., Co., Evansville, Ind., have decided to erect a large brick dryer at their First Avenue plant.

The Portsmouth (O.) Gas Co., has closed a contract to supply the Mead Brick Works on Gallia pike with natural gas with which to burn their ore.

The plant of the Burke Brick Co., at Ft. Smith, Ark., has been run for a week, running as smooth as a clock works. The making of brick on regular is now started.

The Amarillo (Texas) Pressed Brick Co., has completed its large plant and begun operations. B. H. Lewis is at the head of the new company.

A. J. Stewart, son of the late James Stewart, Aberdeen, Wash., is making a great effort to refine the brick industry at Grays' Harbor.

The Boone (La.) Brick, Tile & Paving Co., has recently completed at the cost of \$11,000 the waste heat drying system, thus increasing the capacity of the plant.

The St. Joe Brick Works, Pearl River, Louisiana, have recently added to their plant a "Martin" Compound Granulator to further improve their yard, furnished by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

W. W. Bly, formerly of Rushville, Ill., and two other gentlemen from Schnyler Co., Ills., have bought land in Shelbyna, Mo., and propose to establish there a brick and tile plant.

The United States Steel Corporation has decided to manufacture fire brick for its own use in the Pittsburg, Pa., district, and may buy up some of the fire brick plants in that section.

The Salt Lake Pressed Brick Co., Salt Lake City, Utah, has purchased a quarter of a section of land, which was underlaid with valuable clay and shale. The consideration was \$28,000.

The Missouri-Kansas Shale Brick Manufacturing Co., Kansas City, Mo., has been incorporated with \$250,000 capital stock. Incorporators are John W. Neff, A. R. O'Brien, and Chas. A. DeLaven.

The Ellwood Brick & Limestone Co., Ellwood City, Pa., has been incorporated to manufacture brick and sell limestone. The incorporators are John M. Montgomery, Thomas J. Fulmer and Frank H. Douthitt.

The Buffalo (W. Va.) Brick & Tile Co., has been incorporated with \$10,000 capital stock. Incorporators are M. C. Nash, O. M. Hardy, E. D. McCoy, W. T. Johnson and others.

The Clay Products Co., of Texarkana, Ark., has been incorporated with \$25,000 capital stock. John T. Owsley, is president, Ralph G. Moore, vice-pres., F. W. Mullins, treasurer, and T. E. Howe, secretary.

A scheme for the establishing of a brick works near West Chester, Pa., is being considered by a prominent manufacturer of the county.

The Tonque Pressed Brick & Tile Co., are installing their machinery at Algodones, N. Mex., and will soon have their plant in running order.

R. E. Whitacre of Los Angeles, Calif., has bought out the interests of Messrs Durant and Bush, in the Terra Cotta Works at Elsinore.

All the shale brick manufacturers of York, Pa., and vicinity have agreed to merge their interests into a company which will be capitalized at \$275,000.

Work on the construction of the plant for the Corning (O.) Clay Manufacturing Co., was started the 21st and it will be carried to completion as fast as possible.

The Allentown (Pa.) Paving Brick Co., whose plant at Guth's Station on the Catasaugus & Fogelsville Ry., is to resume operations after a period of idleness.

The Lowe Brick Co., New Paltz, N. Y., is still running with a full force of men, and they fear that they will not be able to fill all their orders before the winter sets in.

The St. Louis (Mo.) Terra Cotta Co., have bought a new site adjoining their plant in Cheltenham, and will build a \$150,000 plant upon same soon as the plans can be perfected.

The West-Greigg Brick Co., of Eldorado, Ills., has been incorporated with \$14,000 capital stock. Incorporators are Roy Greeg, L. F. West and Altia J. West. They have taken over the West Brick Works.

The Rockton (Ills.) Moulding Sand Co., has been incorporated to deal in sand, brick & tile. The incorporators are William Neese, Chas. F. Sachrist and Charles B. Courtney.

J. T. Buckley, for several years manager of the Sheridan Brick Works at Brazil, Ind., has accepted a position as traveling salesman for the Western Brick Co., of Danville, Ills.

P. N. Swenson, W. A. Drowley and Harry Sprink of the Tramway (Wis.) Brick Co., are about to establish a tile plant at Virginia, Minn., when the clay has been treated and pronounced fine.

Messrs Booth and Hedges who own the Rich Hill (Mo.) Brick & Tile Works have erected five new down draft kilns and will build five more. New machinery and a general overhauling of the plant will follow.

The Hanover (O.) Red Pressed Brick Co., has been incorporated with \$130,000 capital stock. They take over the Hanover Pressed Brick Co., plant and will enlarge it. Incorporators are C. H. Forry, George W. Havens, P. S. Phillips, William H. Smith and C. C. Forry.

S. W. Vance, president of the Crookston (Minn.) Brick & Tile Co., states that the demand is far ahead of the supply of brick and that 1,000,000 have been sold for future delivery. They contemplate several improvements which will facilitate the manufacture and enlarge the capacity.

The Karthaus (Pa.) Fire Brick Co., have discovered through efforts of Geologist Isaac A. Harvey that their property is underlaid with six veins of coal ranging from two to five feet in thickness. They also have found some finer clays.

The Central Brick Manufacturing Co., Chicago, has increased the number of its directors from three to five.

The Wabash Ry., through its department of industry is making inquiries for a location of a clay works near Symerton, Ill.

The new plant of the Junction City (O.) Clay Products Co., opened in a fitting manner on October 23d. The general public was invited to be present.

Martin Bros., Portland, Ind., have sold their brick and tile works and are testing clays from Forest City, Iowa, with a view of building a large plant there in the spring.

Isaac L. Lucas, the well known Dover, N. H., brick manufacturer will enlarge his yard and greatly increase its output. William C. Norcross of Boston, Mass., will be associated with him.

F. H. Hyatt, Columbia, S. C., has discovered a deposit of the finest quality of shale on his farm near the city, and is investigating same with a view of organizing a company to work the deposit.

The plant of the Standard Terra Cotta Co., Perth Amboy, N. J., one of the four corporations in the Atlantic Terra Cotta Co.'s. combination is being operated independently same as the other three companies. T. S. Truman is the superintendent.

T. H. Buchanan, a well known real estate man of Grinnell, Ia., has formed a partnership with C. A. Smith, who has been the manager of the Grinnell Brick & Tile Works, and he will hereafter devote most of his time to real estate and will continue as manager of only the sales department of the brick company.

Max Frauenthal, Helier, Ark., wants information on brick machinery.

J. H. Allen, mayor at Bastrop, La., wants brick making machinery.

Oscar High, Whiteville, N. C., will install machinery for the manufacture of drainage tile.

F. B. Davidheiser, of Stowe, Pa., has started fire under the first kiln of brick at his new plant, which makes 3,000 machine brick daily.

G. T. Green, Weatherford, Texas, with others contemplate developing deposits of fire clay which he has recently discovered near the town.

The Missouri Slope Brick & Tile Co., Dickinson, N. Dak., are adding another large kiln to their plant, thus increasing the output very materially.

The Columbia Clay Co., Kennerwick, Wash., has received their brick marking machinery and are now installing same. The buildings have already been erected.

The Okmulgee (I. T.) Brick & Mining Co., has completed its plant of 50,000 daily capacity and it expects to double it in the near future. S. J. Allen is the manager.

Tobias & Sheridan, operating a brick plant at Harrisburg, Pa., on the west side has closed down for the season. They expect to make extensive improvements to the plant during the winter.

The Chehalis (Wash.) Brick & Tile Co., which was originally started on a small scale is gradually increasing its capacity. The latest improvement to be added is the construction of a steam drying room. Messrs Bickford and Burrows are the owners.

## THE GILLETT DOORLESS Hot Air FIREBOX For Blast Kilns

Patent No. 792,709



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

**A. GILLET & CO.,**

Factory, St. Louis, Mo.

ALEDO, ILL.

## DIRECT HEAT

# DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**

62-64 William St.

NEW YORK CITY

## CLAY RECORD.

## DUMP CARS FOR SALE

A few good "Main Line" Dump Cars. Will be put in A-1 condition. Write for description. Detroit Car Building and Equipment Co. Detroit, Mich.

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled factories are offered complete or in part. Cheap. Have several Biewer Mills for sale and others. Engines, Rollers, Crushers Drying Pipes, etc. If you wish to buy or sell write Brick and Tile Machinery, Secor, Ill.

## FOR SALE

One Quincy Clay Gatherer and Brick Press new, in use only two weeks. Address: Elk City Brick Co. Elk City, Okla.

## FOR SALE

One power Press. In number one condition, used only but a short time; capacity 1000 per day. Ask for full particulars. American Reamsted Brick & Tile Co. Madison Ave. New York

## A SOUND PROPOSITION FOR N. W. ALBERTA, CANADA

WANTED—Manager and Superintendent who can introduce capital to equip a complete brick making plant on my clay field of 60 acres, gravel at 40 feet and analyzed by The Henry Martin Brick Machine Mfg. Co., Pa. E. & A., who recommend using the following outfit: Martin Style "P" Disintegrators, and Style "A" Brick Machine for moulding, and the Martin Steam Brick Dryer. The situation of the field is close to the railway siding of Claymore on the C. N. R. 6 miles from Vermilion City, the bull-eye of the famous Saskatchewan Valley, and the Vermilion district, where bricks are now selling for \$20.00 per thousand and great demand at that. Address:

ALEXANDER FASON,  
Prosper Builder and Contractor  
Vermilion, Alberta.

N. W. Canada

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 25 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 750 to 1000 per hour. Greatest bargain. Write for particulars. GREAT EASTERN CLAY CO. 39 Cortland St., New York.

## 50 PERCENT SAVED

Fifty percent saved on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash.

H. H. WALSH  
100 Lumber St., Newburgh, N. Y.

## WANTED

Superintendents, Managers, Experts, also office and salesmen with brick, tile, pipe, or building material experience. Write.

HAYGOOD,  
30 Broadway, New York City, or  
100 Hartford Bldg., Chicago, Ill.

## FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address LOCK BOON 25 Care of CLAY RECORD, Chicago, Illinois

## BRICK YARD FOR SALE

Old established yard in good town of 5000 people, with good country surrounding, 45 acres, good hills and sheds. Good reason for selling. Call on or address CHARLES McNEAL, Maryville, Mo.

## FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply demand, for brick at \$5.25 to \$6.00 per thousand. Fine clay seven feet deep. Good machinery, good water, plenty of manure for hauling less than a mile. Plenty of labor and 40,000 brick now competing for. Good reason for selling. No competitors. Address: GEORGE BARNEY, Leavenworth, La.

## WANTED

Wanted Home-made Potter—both wheel and kiln men. Write to SPOKANE POTTERY CO. Clayton, Wash.

## BRICK PLANT WANTED AT JACKSONVILLE

One of the best places in the whole country to establish a small up-to-date modern brick plant. Local consumption 500,000 annually. Abundance of good clay. No competition. Will give detailed information upon application to the BUSINESS MEN'S ASSOCIATION, Jacksonville, Illinois

## FOR SALE.



Start and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail. THE ATLAS CAR & MFG. CO., Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 18, 24 and 30 pound. For prices, address: ATLAS CAR & MFG. CO., Cleveland, Ohio.

## KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south. L. T. LUKS, Zenith, Ga.

## PLANT FOR SALE

A good steam brick plant for sale, Chambers Bros. Clay machinery, engine and boilers in first class order. Lease or buying.

JOHN HANART & SONS  
38 and South Streets  
Philadelphia, Pa.

## FOR SALE

Brick manufacturing plant, capacity 40000 Six mold dry press, small planting mill and lumber yard. Good shipping territory and an established paying business. Address: J. J. CARE OF CLAY RECORD, Chicago, Illinois

## MACHINERY FOR SALE

Soft mud outfit manufactured by the American Clay Working Machinery Co., consisting of Tipton stock brick machines, direct attached Pug Mill, Mold Sander Brick Molds, 6 Lead Turn Table, 20,000 Wooden pallets. All in fine condition; very reasonable price. Apply to BALTIMORE VITRIFIED BRICK CO., Baltimore, Md.

## PLANT FOR SALE

On account of too much other business to look after I will give a bargain on a first-class brick and tile plant located at Ridgewood, Clayton County, Iowa. For particulars write: S. L. CLARK, Redfield, So. Dak.

## WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the maker of the pan, together with best price. CLEMENT JUDGES, Streator, Illinois

## PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale and good market for all the brick. Address: DENNIS, one Clay Record, Chicago, Ill.

## FOR SALE

A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 18 feet deep. Light over burden of soft mud. Good plant already erected. Large quantities have already been mined and shipped, address bought cheap. For information and samples, address: J. B. SALLER, Alton, Illinois B. C.



See letter on page 101  
H. A. HART, 41 White St., BATTLE CREEK, MICH.

## BUSINESS WANTED

I can sell any business or real estate that is so no matter where located. I reach the people who buy. I will convince you. Established in 1901. If you want to buy or sell, address: FRANK F. CLEVELAND, 1726 Adams Express Building, Chicago, Illinois

## FOR SALE

Fifteen thousand dollars of the Treasury Stock of the Liberal Brick and Tile Co. Capacity of plant when complete, 50,000 vitrified brick per day. Ready market at Kansas City and Springfield, Mo. Object in selling, to complete plant. Liberal, Mo. LIBERAL BRICK & TILE CO., Liberal, Mo.

## SUPERINTENDENT WANTED

A superintendent for a still and are brick plant. One desired that can buy an interest in the company. SUPERINTENDENT, Clay Record, Chicago, Ill.

## FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter, 48 in. diameter, cut both left and right hand. This machine is brand new, but we want the room immediately and will sell at a reasonable offer. BAKER IRON WORKS, Los Angeles, Cal.

## CARS WANTED

WANTED—Second hand cars and truck. Give lowest price and condition in first letter. Box 81, Independence, Iowa

## GAS ENGINE FOR SALE

FOR SALE—A 75 H. P. Gas Engine, complete with air tank and gas-meter, in good condition. Let go cheap if sold at once. Answer: Gas Engine, care Clay Record, Chicago, Ill.

## BRICK PLANT WANTED

"At Wenona, Illinois, one million tons of material, located on "Y" of Illinois Central and Chicago Alton railroads. 100 tons of new material dumped daily. Will make good paying brick and front building brick. Coal mine adjacent. Plenty of artesian water. For information address: WENONA COAL COMPANY, Wenona, Illinois

## FOR SALE

One No. 28 special double shaft Pug-Mill, top and bottom discharge, 12 foot tall, good condition, manufactured by American Clay Working Machinery Co. Sandusky Portland Cement Co., Sandusky, Ohio

## FOR SALE CHEAP

On the Pacific Coast. One Eagle Double Mold Re-press, practically new. 12 foot tall, good condition. -- BELLINGHAM BRICK & TILE CO., South Bellingham, Wash.

## ASTORIA

One of the best places in the whole country to establish brick making plant. Now having all available clay scientists for fire and will give detailed information upon application. Water transporta- tion all the way to the Columbia River. No brick-making plant within 100 miles. 700 Chamber of Commerce, Astoria, Oregon



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### FROST RESISTANCE OF BRICK

By George E. Walsh.

The nearer brick making becomes an exact science the more satisfaction will be given to manufacturers and builders. The elimination of guess-work and unknown factors in the manufacture should be the aim of every reputable firm. Builders of modern high-grade city structures are changing their methods rapidly, and we find the work drifting into the hands of large building contractors who guarantee the quality of all materials used in their structure. They employ experts in the different departments to inspect the work and materials, and as a result anything which fails to come up to the required standard is rejected. It is becoming more difficult every year to dispose of poor bricks, while those which have a high standard of quality rarely fail to find a profitable market.

In the use of building materials most reputable architects agree that bricks are the most serviceable of all artificial products. They represent the right unit for giving variety and stability to walls, and they are durable in fireproof. In the present fireproof building movement bricks stand pre-eminently to the front as the most useful for general work. Since the San Francisco fire the supply of bricks on the Pacific coast has been far below the demand. A good many inferior bricks were used in the old San Francisco buildings, and they must have been partly instrumental in permitting the fire to extend beyond the control of the fire department. A good brick wall, fireproofed on the inside with hard burnt terra cotta porous blocks, and on the outside with structural terra cotta blocks, is probably the best fire-proof thing that can be erected. In tests made in the laboratories in New York and Chicago such a wall withstood temperatures up to 3,000 degrees without crumbling or being seriously impaired. Such walls up to the fourth and fifty story represent the best which modern science has accomplished.

Higher buildings require the re-enforcement of steel frames. When the steel frames are erected, however, they are intended to carry the loads of the different floors, and

are not supposed to withstand fire. They demand perfect protection from high temperatures by an outside and inside wall of bricks or terra cotta. Up to the eighth and tenth stories of such buildings good fireproof bricks are considered the most suitable by architects, but in the twenty and thirty-story structures structural terra cotta blocks are being largely employed owing to their relative weight. They are so light in weight that they decrease the load on the steel frames, and thus secure a rigid wall of great height with the minimum amount of metal framework.

The demand for burnt bricks is therefore an important factor in the present building movement. More burnt bricks which will withstand a high temperature are used today than ever before in the history of the trade. These bricks roughly divide themselves into two distinct classes. One is ordinary burnt bricks for the protection of steel work, but without any ornamental qualities. They are used inside of the walls, and are put up to receive a face of stone, terra cotta, marble or other ornamental material. Their chief quality is their high fire resistance. It does not matter whether they are carefully molded and pressed or even if their ends are a little rough and chipped. But like fire bricks they must be able to withstand a high temperature without disintegrating. The other class of bricks are fireproof, and at the same time ornamental. They are face bricks used in fireproof walls. They must contain a high fire resisting quality and prove sufficiently ornamental to make their exposure in the walls attractive.

These points in brick making are fully appreciated by many manufacturers, and the qualities have become fixed factors. The manufacture has been reduced to an exact science, and as a result builders of the better class employ them unreservedly. Nothing has influenced the fireproof building movement more effectually than the makers of first-class fireproof bricks.

But there are other qualities which demand immediate attention. The effect of frost on bricks is of paramount importance. Heat and cold affect iron and steel to such an extent that contraction and expansion involve many nice little calculations in putting up a skyscraper. To a large

extant the brick walls which protect the steel must serve another purpose. They must protect the metal from dampness and rapid changes in temperature. It is true that many kinds of waterproofing material, either paint or paper, are used to protect the iron and steel from atmospheric dangers, but builders rely more generally upon the bricks to secure the results desired.

There has been a great deal of experiment carried on among builders in the last year for the purpose of finding out the relative value of good bricks in protecting steel frames from heat and cold. The outcome of these experiments may add more scientific data to the building problems. It will result in the call for a more accurate classification of bricks for special purposes. Manufacturers of bricks will furthermore be helped in their work by consulting such data.

Now as a fact bricks differ so greatly that it is impossible to lay down any rule in regard to their action under certain atmospheric conditions, and yet it is a simple proposition to manufacture bricks of a certain standard grade which will under all conditions yield the same general results. It is this standardization, as it might be called, which builders are seeking.

Before exact scientific data in the making of bricks enabled manufacturers to produce uniform standards bricks were pretty much the same, and a good many erroneous ideas concerning them were prevalent. Brick making was in a primitive stage then, and the products of the trade were pretty crude. Their resisting power to heavy weights or loads was not great, and their disintegration under certain conditions was a foregone conclusion. Thus the action of frost on bricks was important and one of the agencies which tended to injure the character of this building material. Bricks were not then supposed to withstand the frost well at all under adverse conditions. Thus if they were soaked with water, and then exposed to a freezing temperature, they would crack or burst open owing to the rapid expansion. This fact discredited bricks for foundation work or for walls where there was a constant exposure to dampness. Those early bricks were very porous, and they absorbed an immense amount of water, and this in changing to ice did cause ruptures which might endanger the stability of walls.

Yet on an examination of many of the old houses of early days in which bricks were used for foundation of walls we find that they withstood the action of freezing very satisfactorily. On the other hand foundations built nearby cracked and tumbled down within a few years. The difference was in the making of the bricks. Some of the early brick makers discovered the value of reducing the porosity of their bricks for foundation work so that they would absorb less water. The porosity of the bricks must to a large extent even today determine their usefulness for foundation work and for street paving. Indeed, in the use of bricks for paving and for sewer work the porosity of the materials is a factor which determines to a large extent their value.

The frost resistance of bricks, and their loss of stability after being subjected to freezing, are points which are of

vital importance to a wide list of trades and industries. It is a well known fact that some bricks which are not subjected to any particular compression can be very porous without materially losing their value. When placed firmly in a wall or pavement, the action of freezing does not materially weaken them unless a heavy compression is applied to them at the moment of great expansion. Thus pavement bricks of great porosity may not be injured, but if a heavy truck passed over them when frozen they would crack and break in pieces. A sidewalk thus laid with bricks of great water absorption qualities might endure indefinitely, but a street pavement where heavy traffic is accommodated would break and disintegrate rapidly.

Similarly bricks for a two or three story structure might last even though subjected to great freezing, but if they were employed in a ten or twelve story structure there would be danger of a collapse through the weakening of the foundations. In making bricks for any particular line of work, therefore, it is essential that their relative density and porosity should be considered as well as other qualities. Builders are studying this problem more and more, and they demand for certain work bricks which will suffer the least from freezing.

Paving bricks are or should be made for the most part of very dense material, so that the percentage of water absorption is comparatively small. The best paving bricks contain as low as 2.41 to 3.31 per cent of water absorption, and the best buff face bricks even as low as 1.32 per cent. From these dense bricks we can go up to common backing-up bricks with a percentage of absorption equal to 20 to 25 per cent. Common wall bricks contain from 7.70 to 13.70 per cent of water absorption, while many machine-made bricks prove very good for general use with a water absorption possibilities of 12 to 19 per cent. Good sewer bricks have a porosity sufficient to permit of an absorption of water equal to 8.40 per cent.

Good face bricks range from 3.50 to 12 per cent, and hard burnt brick about 5 per cent. Arch bricks have a porosity of a high degree without affecting their value. As a rule the greater amount of water that the bricks absorb the greater will the danger be in freezing. The expansion is naturally greater in bricks which contain an unusual amount of water. But it is not a conclusive fact that the porosity of the bricks necessarily determines their usefulness. There are variations in the different bricks tested which indicate that the loss of stability through freezing is merely one factor in the situation. Much depends upon the strength and compression of the bricks. A paving brick with a high compression and a moderate porosity will often lose in stability much more than another with a moderate compression and greater porosity. A nearly vitrified brick will show probably the least loss of stability from freezing, although variation in vitrified bricks is sufficient to prevent any general rule. A hard faced brick with a porosity sufficient to allow a water absorption of 4.19 per cent, and a compression of 1,167 pounds, showed after severe freezing a loss in stability of only 5.1 per cent, while a paving brick with a compression of 764 pounds and a percentage of ab-

sorption of 2.41 showed a loss of stability of over 45 per cent. The reason for this loss must have been in the composition of the brick and the method of making.

Some go so far as to claim that there is no relationship whatever between the porosity of bricks and their frost resistance, and to discover the cause of the latter we must look into the ingredients of the bricks and their methods of mixing and baking. The loss in compressibility in bricks after freezing is one of the peculiar results which seem to carry out this conclusion. The loss of stability in some bricks is insignificant, and in others quite startling. In a few tests the compressibility after freezing has actually increased, and instead of a loss of stability there has been an improvement. This is particularly noticeable in very porous bricks. A series of tests showed that a backing-up brick with 16.31 percentage of absorption, and a compressibility of 249 pounds was stronger and better after freezing nearly 25 per cent. Its compression after freezing was 310 pounds. This test, however, was unusual, and simply indicates the wide range of variation possible. A face and paving brick with 7.82 percentage of absorption and compression of 444 pounds instead of showing a loss of stability after freezing gained 9.9 per cent. Gains in stability of 1 to 3 per cent in backing-up bricks, face brick and common brick after freezing are quite common, but few if any instances are on record showing a gain in stability from freezing with any of the dense bricks with a very low porosity and small water absorption.

In making tests with such bricks by freezing not one but a dozen and sometimes twenty and thirty freezings and thawings were necessary to establish any reliable data. The effect of one freezing is not very great. The bricks show a slight readjustment of parts and a tendency to open in slight crevices, but these are so minute that they are scarcely noticeable to the naked eye. Even the second and third freezing merely tends to emphasize these small lines in places. But the first lines are generally the natural fractures which subsequent freezings and thawings increase and cause eventually to break.

Many attempts have been made to overcome this tendency to weakening of bricks under freezing, and bricks made with a large percentage of pure clay and silica have resisted thirty freezings and thawings without any material loss. The question of scouring bricks which will have a high porosity and a very great resisting power to frost is one that can only be answered by scientific tests and experiments. The need for such bricks is imperative, and science should be able to solve the problem to the satisfaction of all. With the increased use of bricks for paving, sewers and foundation work it is essential that uniformly standard bricks of great frost-resistance should be made so that contractors can depend upon them for all classes of work. The reputation of a contractor or engineer is often dependent upon the quality of his materials, and if bricks of the right quality cannot be obtained he will resort to cement and concrete. Yet bricks should be made which will resist frost better than concrete at less actual cost.—The National Builder.

## THE PRODUCTION OF COMMON BRICK

Of the long list of mineral products of the United States concerning which statistics are collected by the National Geological Survey, only three—pig iron, copper, and bituminous coal—exceeded in value in 1906 the products of the clays; and of the clays themselves the product ranking highest in value was, as heretofore, the common brick, of which more than ten billion to—be exact, 10,027,039,000—were marketed during the last year. The value of this great product amounted to \$61,300,696, an increase of \$93,687 over the value for 1905, and constituted 47.30 per cent of the value of all the brick and tile products and 38.07 per cent of the value of the entire product of the clay industries.

The largest production of common brick in 1906, by any one State was reported by New York, whose output amounted to 1,335,579,000 brick, valued at \$9,205,981, or about \$6 per thousand. This quantity represents 15.31 per cent of the entire output of the country, and the value is 15.02 per cent of the total. The greater part of New York's common brick comes from the Hudson River region, which is one of the most interesting centers of the clay-working industries in the United States and has for many years been the almost exclusive source of supply for the common building brick used in New York City.

Next to New York, the largest producer of common brick in 1906 was Illinois, which reported an output of 1,195,210,000 brick, valued at \$5,719,906, or \$4.79 per thousand. The great common-brick producing region of Illinois is Cook County, and it was the decline in price in this district that brought the average price per thousand for the State to \$4.79, the lowest for several years.

The only other State reporting more than a billion common brick was Pennsylvania, whose marketed output amounted to 1,027,541,000 brick, valued at \$6,586,374, or \$6.41 per thousand. While third in quantity the product of this State was second in value, and the average value per thousand was greater than that for either New York or Illinois.

Olio's production of common brick in 1906 was fourth in quantity and value—550,422,000 brick, valued at \$3,243,157 or \$5.89 per thousand—and New Jersey's was fifth, amounting to 413,258,000 brick, valued at \$2,610,686, or \$6.32 per thousand. The other States range from Kansas, with 314,371,000 brick, valued at \$1,376,552, or \$4.38 per thousand, to South Dakota, with 6,064,000 brick valued at \$54,175, or \$8.93 per thousand. California's 278,780,000 common brick were valued at \$1,652,866 or \$7.05 per thousand.

The average price per thousand for common brick in 1906 ranged from \$0.69 in Wyoming to \$4.38 in Kansas, the average for the whole country being \$6.11. The State whose average per thousand most nearly approached the general average was Tennessee, where the average price was \$6.13 per thousand.

An advance chapter from "Mineral Resources of the United States, Calendar Year 1906," on the clay-working industries, by Jefferson Middleton, of the United States Geological Survey, is now ready for distribution by the Survey.



## REDUCING THE COST OF POWER

With the rapid increase in the use of machinery which has taken place during recent years in the clay industry the cost of power has become one of the largest items of expense, and as there is a strong tendency for the cost of fuel to rise so there is a continually increasing expenditure on power as times goes on, says the British Clayworker.

Hence the possibility of reducing his expenditure in this direction is a subject which appeals to every manufacturer of clay goods, and as no improvements in power production have been so effectual as the comparatively new "suction gas-producer," the relative advantages and disadvantages of this form of power generation may be usefully set out here.

The enormous waste of energy in steam engines is well known, but the various uses which the clayworker can make of steam—for drying, etc.—have made him contented to go on using a wasteful form of engine, and so long as the amount of power required could be supplied by his boilers he has been in the habit of thinking that either his engine was being driven for nothing and his floors cost a lot in steam, or his engine was wasteful but the drying floors, etc., made up for it by costing nothing.

This is a seriously mistaken attitude to adopt, and, where sufficient capital is available, it would amply repay the owner to replace his steam engines by a more economical gas engine, with a suction gas-producer.

The method of producing the gas is extremely simple, and there is no possibility of explosion, unless rank carelessness is shown. In fact, a suction gas-producer is much safer than a boiler at 80 lb. pressure.

The gas is produced by the very slow burning of anthracite coal or coke in a special furnace, combustion being aided and a larger quantity of gas being produced by means of a small jet of steam produced quite automatically from water heated by waste heat in the gas. The gas produced is contaminated with tar and similar products, and is purified by passing through tanks filled with coke breeze, over which a small current of water flows. In some cases a sawdust box is also used to catch any further impurities.

In order to start the engine a small hand-driven fan is used to blow up the fire (after the manner of the old-fashioned bellows), but once started the whole process proceeds automatically, except when the hopper has to be filled with fuel—an operation requiring about ten minutes a day.

The following table shows the relative cost of power with regard to fuel consumption:—

Type of Engine	Kind of Fuel	Price	Fuel per Horse Power per hr.	Cost of 100 B. H. P. per 10 hrs.
Petrol engine....	Petrol.....	6d per gal.....	1 pint	£ s. d. 3 2 6
Gas engine.....	Town's Gas	2s. per 1000 cu. ft.	30 cu. ft.	2 0 0
Ordinary steam engine.....	Steam coal	10s. per ton	8 lb.	1 15 9
Compound steam engine.....	Steam coal	10s. per ton	4 lb.	17 10
Producer gas plant.....	Anthracite or coke	16s. per ton	1½ lb.	10 9

With the aid of the above table the cost in different localities may be ascertained by substituting the different cost of fuel, but taking the figures as a fair average, it will be seen that a clear saving of one-third to two-thirds of the present cost of fuel can easily be made.

Add to this the saving effected by the attention of a man for not more than two hours per day to do all that is necessary in cleaning the producer and engine, and the wonder is that gas engines are not far more popular in clayworks than they are at present.

Another matter which should appeal to the clay man, though, we fear, it does not always do so, is the much greater cleanliness possible with a gas producer, partly owing to the difference in the plants themselves, but more especially to the absence of steam.

With regard to the space occupied the advantage is all on the side of the producer and gas engine, whilst the fact that the life of such a plant is greater than that of a steam engine and boiler, with practically the same capital outlay in the first place, is a still better reason why power plants should be introduced into clayworks whenever the opportunity arises.

If, instead of "suction producer," a "pressure producer" is employed, gas for illuminating and other purposes may be prepared, and this will usually compensate for the apparent loss, through having no steam available for drying purposes.

The steam difficulty is, however, much less than it is thought to be by many clayworkers, for a very small boiler working at a very low pressure will supply ample steam for all the drying requirements of even a large yard, and at a much more economical rate than when large boilers are used for the purpose, and for driving engines at the same time.

The special fuel used in producers is also a subject on which clayworkers often err, because they imagine that a very expensive fuel is needed. In all cases of expense it is not the cost per ton of the article purchased which has to be considered, but the cost per unit of power obtained. From this latter standpoint the small amount of fuel required fully compensates for its higher market price, and brings the actual cost of fuel far below that required for steam engines.

Furthermore, the various producer manufacturers are rapidly improving their appliances, and already certain kinds of ordinary steam coal can be used with good results. It is not, therefore, too much to hope that in the course of a year or two still further economies will be reached by the employment of cheaper fuel than the anthracite or coke now employed.

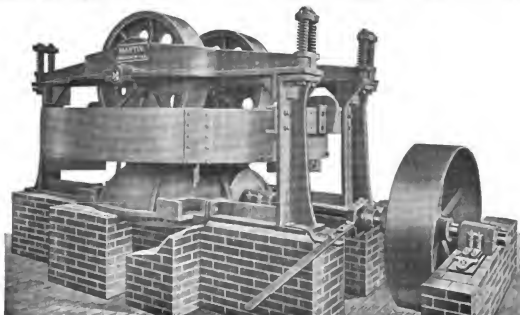
There are some cases where steam will still continue to be used for heating purposes, and where the conditions of the works render it cheaper to do this with a battery of boilers supplying steam engines at the same time, but in most cases the advent of the suction gas-producer has opened up a new era in the production of power for clayworks purposes, and will undoubtedly come to the front where power, as distinct from heating, is the requirement of the manufacturer of clay goods.

**RAPID PROGRESS IN BUILDING DRY PANS**

Perhaps no class of manufacturers has made more rapid progress within the last decade than that devoted to the manufacture of brick and kindred products. It can safely be said that the advance has been largely due to the designing and perfecting of machinery especially adapted for this purpose. Foremost among these improvements and one which has had more to do with the success of the clay-working industry has been the introduction of latest improved Dry or Wet Pans.

We take much pride in placing before our readers the very latest machinery in this line, for reducing the raw materials ready for the Brick Machinery.

This 9-ft. Dry Pan is under-driven, the heavy Bevel Gears being protected from the dust and clay, and well shrouded, and so arranged that the grease and oil can be applied and retained without any difficulty whatsoever. The gears are easy to get at to repair or to examine. The shafts are very heavy and short. The journals are long through the bearings. The Step Box is of large diameter, and ball-bearing, the steel balls being 3 in. in diameter.



**MARTIN'S NINE-FOOT UNDER DRIVEN, BALL BEARING, DRY PAN**

The Mullers are solid and made up of hard channel iron, with soft centers. Each Muller is independent of the other, and is held in place by the heavy yoke, which adds to the crushing weight.

The Pan revolves. It is neatly designed, heavily proportioned throughout, and has a Friction Clutch with large iron pulleys, so that the Pan can be gradually started and instantly stopped.

These 9-ft. Dry Pans are carried in stock or in course of construction, and will be on exhibition in the Ware-rooms at the factory of The Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania, who are making a full line of Crushing, Grinding and Elevating Machinery.

**GULF STATES BRICK COMPANY WILL INSTALL MORE EQUIPMENT**

There recently was an important meeting of the directors and stockholders of the Gulf States Brick Company held in the company's offices in Beaumont, Texas.

Mr. Newton R. Wilson, vice president of the Industrial Lumber company, who is president of the Gulf States Company, presided at the meeting and Messrs. Ernest M. Loeb and T. J. Feibelman, large stockholders in the company, of New Orleans, La., were present.

The stockholders ratified the decision reached at a meeting of the directors about a fortnight since and decided to abandon the use of oil as fuel for firing the kilns at the two large plants of the company, operated near the city, and return to the use of wood. To this end the timber located on a tract of land, between 1,400 and 1,500 acres of land controlled by the company, will be put in cordwood and utilized as fuel. Heretofore oil has been used for fuel but the high prices now prevailing renders its use prohibitive as fuel.

It was also decided to make extensive improvements in the plants and equipment, the same to be carried into effect

at once by the officers of the company. The improvements will include further and additional facilities for handling brick in increased quantities. The two plants of the Gulf States Brick Company turn out a product of from 25,000,000 to 30,000,000 brick annually, and the increased facilities will enable the company to make 40,000,000 brick per annum if required. Down draught kilns for faced brick will also be installed as well as additional Dry Press machines.

The business of the company for the past year was reviewed and pronounced extremely satisfactory and the company will expend large sums in making the contemplated improvements.

Messrs. Loeb and Feibelman, after attending the meeting, returned to their homes in New Orleans.

## CLAY RECORD.

## THE RUST CLAY FEEDER AND MIXER

The Rust Clay Feeder has been brought out in response to the demand for a better method for mixing and feeding clay, in brick and tile factories, and all clay working plants. It has been in successful operation for five years. The saving in labor, increase in production, and improvement in product which it effects, makes it a necessity to the up-to-date clay worker.

The principal advantage is that is it saving in labor. By its use, the time of one to two men is entirely dispensed with. The clay, being dumped into the hopper of the machine from the car, is automatically fed into the disintegrator.

The operation of the machine is automatic. The construction of the hopper is such that the clay does not clog up, and feeds down on the spirals by its own weight. The machine requires no attention after the feed to the disintegrator has once been regulated. The spirals are nine inches in diameter. The diameter of the main driving pulley is forty inches. R. P. M. 70. The body is constructed of 6-inch channel irons, and the hopper of heavy sheet iron, reinforced with angle iron at top. The spirals are made in one solid piece, and rigidly fastened to the shaft by a patented process.

The Rust Clay Feeder dispenses with the men ordinarily



TYPE "A" FEEDER

The clay is tempered, the spirals (see cut with top off) draw their supply evenly from all parts of the hopper, mixing the clay perfectly.

The feed is regular, preventing the choking and consequent wear and tear on the disintegrator, a vast improvement over the irregular feeding by hand. The perfectly regulated feed, given by this machine naturally tends to improve and increase the output of the plant.

The feed may be varied in amount, at will, by raising or lowering the front of the hopper or by increasing the speed.

used to feed the clay into the disintegrator. This saves the time of from one to two men, who will draw from \$1.50 to \$4.00 per day, according to the local rate and amount of work. The average saving will be about \$2.25 per day. Counting 250 working days in the year, this means a saving of \$562.50 where one of these machines is used, a return of over 100 per cent on the investment. Not bringing into account the great value in tempering the clay, and the regular feeds on the machinery, thereby saving repair bills and costly delays.



TYPE "A" FEEDER WITH BOX REMOVED

It requires little power as it is back-geared, the spirals running at very slow speed. The average machine does not use over two horse power, and this power is saved in the other machines because of the regular feed, so that total load on the engine is really not increased.

The machine is built of the very best material for the purpose required, and all parts are more than strong enough to resist any strain that may come upon them.

This machine is constructed to feed direct into the disintegrator, but where it is desired to convey the clay off to one side, we manufacture a cross spiral attachment, which is attached to the end of machine and is operated by means of pulleys and belt.

Every machine is fitted with a friction clutch pulley, and is thoroughly tested before being crated for shipment.

As will be seen from the following cuts, we manufacture

different types of drives to suit conditions in different factories.

The manufacturer of this machine placed it on the market about 18 months ago and they have placed them in a large number of factories in the United States, Canada and have even shipped them to New Zealand. Every machine without one exception has given satisfaction.

The company has been forced to double the capacity of their shop and are now erecting as fine a foundry as in the state of Indiana. A contract has also been closed with a New York house to handle the foreign sales.



VIEWS OF THE RUST CLAY FEEDER IN OPERATION  
IN BRICK PLANTS



From the tone of the testimonials in their latest catalogue it surely looks to be one of the best feeders that has ever been offered to the clayworkers and the machine now has stood every test and proved to be satisfactory.

The Marion Machine, Foundry & Supply Co. of Marion, Indiana can give you all the information you wish further on clay feeders.

#### PRODUCTION OF BAUXITE AND ALUMINUM IN 1906

The production of bauxite in the United States in 1906 amounted to 75,332 long tons, valued at \$368,311. Compared with the production in 1905, 48,129 long tons, valued at \$240,292, the production in 1906 has increased 27,203 tons—nearly 57 per cent—while the average price per ton remains almost the same. Arkansas still leads in production, the other producing States being Georgia and Alabama.

The use of low-grade bauxite for the manufacture of refractory brick and the prospective new developments in the aluminum industry have stimulated interest in deposits of bauxite. In Tennessee developments have already begun on deposits at Missionary Ridge and at East Lake and Sherman Heights, suburbs of Chattanooga. Bauxite has been noted in California and also in Kentucky.

Bauxite in the form of bricks has proved to be of great value as a refractory material for lining basic open-hearth steel furnaces and lead-refining furnaces, being superior to fire brick for these uses.

As an ore of aluminum bauxite is still in great demand. The production of aluminum has increased in twenty years from 18,000 pounds to nearly 15,000,000 pounds annually, its production in 1906 having been 14,910,000 pounds. This increase in production was accompanied by a decrease in price from \$15 to 37 cents per pound. The application of the metal to new uses from time to time and its increased

employment in old ways has caused a constant demand for it, which has not been fully supplied.

Recent plans of the Aluminum Company of America, formerly the Pittsburgh Reduction Company, contemplate the erection of a model factory town, comprising 200 new houses, for the employees at its factories at Massena, N. Y., and a mill for rolling aluminum sheets at its New Kensington, Pa., plant.

Projects are under way which, if realized, will place in the field several competitors for the aluminum trade. One of these projects, it is reported, will be located on Cumberland River, about 25 miles below Williamsburg, Ky., where the river falls about 65 feet. The enterprise involves the construction of a dam which will provide 20,000 horsepower at any season of the year.

An advance chapter from "Mineral Resources of the United States, Calendar Year 1906," on the production of bauxite and aluminum in 1906, by E. F. Burchard, is now ready for distribution. The pamphlet comprises a note on aluminum salts, including alum and aluminum sulphate, with descriptions of undeveloped deposits of these salts in Nevada and New Mexico.

## SHOULD ROOF TILES BE GLAZED?

The added beauty of glazed roofing tiles for certain classes of building opens up a question of great technical interest, quite apart from the artistic side of the matter. It is well known that many glazes are far from durable when exposed to the exigencies of the climate, but even if a perfectly durable glaze—one which would not craze or shell after several years exposure could be used, would it be desirable to apply such a glaze to the majority of roof tiles or not?

A well-known Continental tile manufacturer, who has studied the question most carefully, has come to the conclusion that glazed roofing tiles are a delusion and a snare, and that their beauty is only obtained at the sacrifice of durability in countries where the tiles are subjected to repeated frosts.

In lecturing before the German tile makers recently Herr Hielscher pointed out that the porosity of tiles by different makers, even when obtained from the same yard, often differed considerably. Some tiles are exceedingly porous, whilst others are partially vitrified, and can absorb little or no water.

The average tile is distinctly porous, but, provided that it is not open enough to be penetrated by a series of heavy showers this is no objection. Porosity alone is no hindrance to durability, as many of the oldest tiles known are exceedingly porous.

The reason that porous roofing tiles are regarded with suspicion in some quarters is that there is a difference in durability dependent upon the size of the pores and the relative thickness of clay around them. Thus if the pores are very large and the clay between is very thin, the latter will not be able to resist the pressure of the expansion when water in the tiles is converted into ice, and damage will be done. If the air spaces are more evenly distributed and smaller, a satisfactory tile may be produced which has, at the same time, a high degree of porosity.

## SOME ADVANTAGES

It is commonly argued that a coating of glaze on a roofing tile will prevent any water from soaking into it, and thereby prevent any action of frost on the tile, no matter how porous the latter may be. To a large extent this is true, and fully so as regards the effect of water on the outside of the roof, but is it equally true of water which gains access to the tiles from inside the building?

Provided the glaze is a suitable one to withstand the variations in temperature and other climatic conditions, it is quite certain that much of the water generally absorbed by roofing tiles cannot be held by those which have been glazed. But the question comes—is this the most important part of the water when regarding the tiles from a durability standpoint in frosty weather?

## —AND DISADVANTAGES

In every building a certain amount of water vapour is always present, and can be seen in a condensed form on the inside of the windows, and occasionally on the walls in cold weather. Water vapour, being lighter than air, has a strong tendency to gather in the upper parts of the build-

ing—near the roof—and the largest amount of condensation therefore takes place in the tiles. The difference is that the porous tiles absorb this water so that in the ordinary way it is not noticed, as is the water condensing on the non-porous walls of window panes.

Another difference also occurs in that when windows are opened the condensed water again evaporates and disappears, but with a glazed tile roof this evaporation cannot take place to any appreciable extent, and consequently remains within the tile long after the cold weather which caused its production has gone. Consequently, the amount of water accumulating in the pores of the tiles increases until they hold no more, and the action of the frost is as strong or stronger than if the tiles were porous.

## A COMPARISON

If a short piece of glass tube, about one-eighth of an inch internal diameter, be held vertically, and its lower end immersed in water, the upper end being then closed with a finger, the tube may be lifted out and carried about the room without any danger of the water flowing out of the tube, in spite of its vertical position. The reason is that the pressure of the air outside the tube is greater than that within it, and consequently the water remains in the tube. If the finger is removed the balance of pressure is destroyed and the water runs out.

If a smaller tube—say one-twentieth of an inch in diameter—were used, there would be no need to place one finger on the upper end, as the attraction between the water and the glass would be great enough to keep the water in the tube. This action also takes place in roofing tiles.

The result of these combined actions is that the water remains in the tiles and cannot be evaporated from above because of the coating of glaze; it cannot escape from below because of air pressure. Consequently it is fully exposed to the frost, just as much as if no glaze were present.

The only way in which to prevent this troublesome condensation from occurring is for the tiler to so lay the tiles that they admit of sufficient ventilation and air circulation, without at the same time having sufficient space between the joints for rain to leak or be blown in. By this means the water vapour may escape without accumulating in the roof, and much of the difficulty may be prevented.

Above all must the tiler be warned against fixing the tiles with cement-mortar, as this prevents their legitimate expansion and contraction with varying temperatures, and is a frequent cause of broken tiles, especially when these are of the interlocking kind. If such tiles are too twisted to allow of their being fixed without the assistance of some filling material, then a lean hair-line-sand mortar should be employed, but never cement.

Some architects specify glazed roofing tiles for window sills and other parts of buildings, where they are laid directly on or at the side of ordinary brickwork. When this is done they should be warned that no tiles will stand long under such conditions unless they are completely vitrified throughout, and not merely surface glazed.

The moisture in the surrounding brickwork is bound to enter into the porous backing of the tiles, and, being unable to evaporate (on account of the glazed surface) it remains there, and the tiles are split after a few frosts. Such tiles must, if glazed, be protected by means of a waterproof backing and side pieces, or an air space must be left all round the tiles.

With the precautions indicated, glazed roofing tiles may be used with success and satisfaction; without them they will inevitably be disappointing failures. As much depends on the tiler, it is to the interest of the tile maker to see that this man knows what to do and what to avoid.

# POTTERY OUTLOOK GOOD; PRICES SHOULD BE FIRM

East Liverpool, Ohio, Nov. 8.—With potteries of the United States running full time, with collections showing a marked improvement, holiday order brisk, the condition of the pottery trade of the country today is in better shape than for many years. The Ohio Valley is filled with brick, sewer pipe and tile factories and all of these firms are handling all the business possible. The year of 1907 will close as being one of the most remarkable in the clay industry.

So far as pottery is concerned, it is conceded on every side that prices should be more firm. It is apparent to all that no trouble is encountered to secure business. Manufacturers have been rushed with orders since the end of the early spring trade, and this condition will, most certainly, continue until the end of the year.

While there has been some very slight labor disturbances in the western pottery district this year, they have been of no consequence to the manufacturers. Kilnmen, just a few of this branch of the trade, struck because of a slight difference with the manufacturers, and this, happily, is all that occurred to mar an otherwise peaceable employment.

The shortage of small help in the potteries has been felt in the West more than in the East. In the summer season there is no lack of this sort of help, but as soon as the schools open, the Ohio child labor laws are such that factories, generally speaking, are almost drained for small help. It is becoming more noticeable every year, the tendency of the American youth to seek a higher education. It is a fact that today the child of 14 only goes to work when there is absolute need of the wage he earns by those at home. Manufacturers are close to observe these conditions, and while applauding inwardly the purpose of the youth, yet the potteries are not today employing the number of small help that is generally required.

A marked feature of the American pottery trade this year has been the effort of the manufacturer to make a higher grade of ware. The market for specialties is growing, and the pottery manufacturer has been quick to grasp this opening for trade. The class of decoration of American-made pottery is constantly advancing. The body of the ware is undergoing a change, which improvement is very noticeable. That the American pottery manufacturer will be making as high a grade of ware as the imported article at an early date there is no room to doubt. Everything is working with this end in view.

Many potteries in the West have been compelled to increase their capacity in order to care for increased business during the year. Although one pottery manufacturer in this district is producing more ware than the combined output of six 10-kiln plants, yet other manufacturers are enjoying a big trade.

Some important discussions are expected to take place at the annual meeting of the United States Potter's Association, which will be held at the Hotel Raleigh, at Washington, D. C., early in December. A meeting of the executive committee will be held soon for the purpose of deciding upon a date. Mr. James Pass of Syracuse, N. Y., is president of the association, while Mr. George C. Thompson of this

city is vice-president. It is believed in the West that Mr. Thompson will be advanced to the presidency at the Washington meeting.

A belated season held back the paving brick trade throughout the Ohio Valley. While factories have been quite busy, it is related that more early selling would have resulted *McClurg & Co.*

had not the weathers held up municipal improvements. Throughout the summer, however, all plants were active. The demand for brick for paving purposes continues good even at this date. Work is now being completed which municipal bodies ordered early in the summer, and many contracts will go over for another month.

With the manufacture of sewer pipe, conditions are somewhat similar. Business has been good all year. The American Sewer Pipe Co. placed a new plant in operation in this city, while down the Ohio Valley manufacturers have been compelled to increase their kiln capacity. Extensive improvements looking forward to the doubling of the capacity of the plant of the East Ohio Sewer Pipe Co., at Irondale, O., are also under serious consideration. Work, however, will not start on this change until after the end of the year.

Tile manufacture is also being introduced in the Ohio Valley, and the first plant started this year has been compelled to double its capacity. This plant is devoted exclusively to the making of floor tiles.

Electric porcelain manufacturing is fast taking a hold in the West, and at no distant date East Liverpool will take the lead over Trenton, N. J., in the manufacture of this class of goods. The electric porcelain business is growing at a most remarkable rate and so great is the field that another plant is being erected in this city. Three years ago there were only two plants in the West engaged in the making of electric porcelain goods. Today there is nearly a dozen, and others budding.

As most all of this production is used in electrical work it can be readily seen just how extensive the field really is.

## AMERICAN SEWER PIPE CO. IS RETIRING STOCK

Stockholders of the American Sewer Pipe company were down the new rates. It is expected these rates will be a great notified November 4 that a special meeting will be held in Jersey City, November 20, to consider a proposition to retire \$1,000,000 of the capital stock. The capitalization of the company is now \$8,000,000. There is a large number of stockholders of the company in Akron. The general offices are in Pittsburgh, Pa., and the charter office is in New Jersey. Barberton and Akron each contain a plant, and George Hill, vice president of the company, has his residence in Akron.

Recently the company began buying in its stock at \$20 a share, borrowing some of the money for the operation, says Intelligence from Pittsburgh. When the money market tightened and funds became scarce the dividend was cut and the money saved from that source diverted into the stock market for the purchase of the shares at the low price fixed by the corporation.

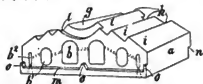
The American Sewer Pipe company is usually known as the Sewer Pipe Trust, and is said to have controlled the entire trade through a pool with smaller companies until this was dissolved by the action of the United States at Jamestown, N. Y.

### NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

865,382. Invert or Block for Sewers and Pipes. Watkin Hall, Great Crosby, near Liverpool, England. Filed Feb. 26, 1906. Serial No. 393,097.

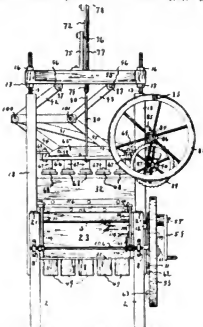
An invert or sole block having continuous land drainage channels the upper portions only of such channels being in communication with each other to allow said channels to act as settling chambers, there being water entrance openings extending downward from certain of the channels to the base of the invert.



The combination with inverts or blocks for pipes made with channels in the base, and perforations for admitting land water into said channels, of a bed or foundation for the block, consisting of a framework made of longitudinal bars and cross-pieces with a filling of cement, said framework being so made as to keep the cement away from the said perforations, and a filling of rubble at each side of the said framework.

866,175. Cement-Brick-Pressing Machine. Philip K. Young, Omaha, Nebr. Filed Aug. 21, 1906. Serial No. 331,436.

In combination, a machine as described, comprising a frame; a horizontal shaft in suitable bearings upon the frame; a first stop-lug upon the frame; a second stop-lug upon the frame; a balance wheel secured upon said horizontal shaft and having thereon a first engaging-head and a

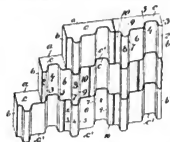


second engaging-head; a series of stationary, vertically-disposed molds upon the frame and provided with upper, open end-ports; a series of upper dies disposed in alignment with and having means for movement within a part of the upper, open end-ports of said stationary, vertically-disposed moulds; a series of lower dies; one of each of the

dies of the lower series seated within each of said stationary, vertically-disposed molds and having a rack formed upon its outer edge; pinions upon said horizontal shaft in engagement with the racks upon said dies of said lower series of dies; means to produce a rotative movement of said balance wheel to cause engagement of said first engaging-head with said first stop-lug, and means to produce a reserve rotative movement of said balance wheel to cause engagement of said second engaging-head with said second stop-lug.

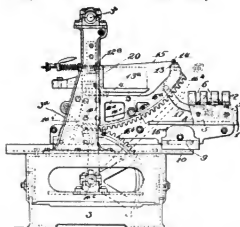
866,360. Concrete Block. Isaac B. Hill, Plainfield, N. J. Filed Apr. 25, 1907. Serial No. 370,124.

A series of similar concrete blocks forming the outer surface of a wall and a series of similar blocks in a reversed position forming the inner surface of a wall, each block having an outer plain face, plain end faces and plain top and bottom faces and a face opposite to the outer plain



face of irregular surface, in which there are three surfaces in the same plane and in a plane parallel to the outer plain surfaces, three surfaces at one end that form a recess toward the outer plain surface and three surfaces at the other end to extend away from or form a projection from the outer plain surface with the blocks of the superimposed layers reversed with reference to one another and with broken joints, and the blocks of each horizontally disposed layer reversed in position and spaced apart so that between said blocks a tortuous or zig-zag passage-way is formed which is vertically-disposed and continuous as a dead-air space for the height and length of the wall.

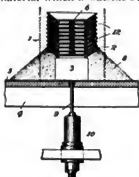
867,149. Brick-Cutting Machinery. Andrew Ramsay, Mount Savage, Md. Filed Mar. 24, 1905.



In brick-cutting machinery, a cutting table, a reciprocating support arranged in operative relation with respect to said table and having that end opposed to the cutting table formed at an inclination, a cutting means interposed between the cutting table and the said support, a pallet-holder carried by said support, a pallet mounted in said holder and arranged below the upper surface thereof, operating means for said cutting means, and an operative connection between said cutting means and said support for moving the support during a part of the operation of said cutting means.

868,106. Bedding Ceramic Ware for Firing. Ernest Mayer, Beaver Falls, Pa., assignor of one-half to Joseph Mayer, Beaver Falls, Pa. Filed Jan. 4, 1907. Serial No. 350,811.

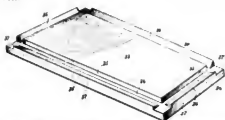
The process of bedding ware for firing, consisting in confining a body of suitable bedding material about and between the articles of ware, and then agitating the articles and bedding to effect even distribution of the bedding, and removing the bedding material which is outside of the said articles.



The process of bedding ware for firing, consisting in confining a body of suitable bedding material within a shell and about and between the articles of ware, then agitating the articles and bedding to effect even distribution of the bedding, then removing the shell and surplus bedding material, and burning the ware within a saggar in the kiln.

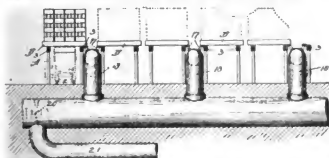
866,755. Tiling. Joseph M. Wells, Newark, N. J., assignor of one-half to Frank L. Davis, Chicago, Ill. Filed July 3, 1907. Serial No. 381,070.

A tile having along the edges of its inner face grooves to receive cement, said grooves having substantially vertical inner walls and outwardly inclined outer walls; substantially as set forth.



A tile having on its inner face an encompassing edge groove defining an inner panel and whose outer walls cooperate with the edge walls of the tile to form edge flanges 17 at the ends and sides of the tile; substantially as set forth.

867,872. Apparatus for Drying Brick. John C. Boss, Elkhart, Ind. Filed Sept. 28, 1906. Serial No. 336,621.

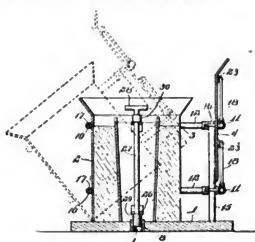


In a brick drying apparatus a trunk for conveying the air-supply, a series of pallets for supporting the bricks, said pallets having openings for the passage of air to the bricks placed thereon, supports for the pallets arranged to permit the ends of the pallets to project over said supports, and

means for detachably connecting said projecting ends of the pallets with the air trunk, substantially as described.

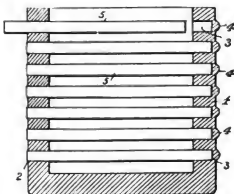
In a brick drying apparatus, a pallet having an air chamber with discharge openings, supports adapted to receive the ends of the pallet, a track for the pallet conveying truck between the pallet supports, an air supply pipe by the side of the support, and detachable connections between the air supply and the pallet chamber, and an automatic valve in said connections, substantially as described.

867,129. Mold. William L. Hart and Frank J. Daniels, Olney, Ill.; said Hart assignor to Charles C. Daniels, Olney. Filed Dec. 1, 1906. Serial No. 345,904.



In a device of the class described, a frame, a mold disposed therein comprising side and end walls, one of said walls being fixed to the frame and the others movably arranged therein, a pallet on which the mold rests, and means connecting the movable walls to the frame for upward and outward swinging movement to inactive position, the mold being adapted after the movable walls have been moved to inactive position, to tip bodily forward for discharging the block.

866,960. Saggar for Threading Tiles, &c. Thomas Pratt, Beaver Falls, Pa. Filed Oct. 18, 1906. Serial No. 334,545.



A device of the character described, consisting of a receptacle having tiers or rows of apertures in one wall thereof and corresponding tiers or rows of recesses in its opposite wall, said latter wall having formed therewith outstanding boss-like portions forming closures or walls for the corresponding or outer ends of said recesses, and rod or bar supports insertible through said apertures and with their rear ends lodged in said recess and limited in their insertion by, and resting against said end walls of said recesses.



## CLAY RECORD.

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"I like to read American advertisements. They are in  
themselves literature, and I can gauge the prosperity of the  
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the  
very time that advertising should be the heaviest. Ninety-nine  
out of every hundred merchants advertise most when there is  
least need of it, instead of looking upon advertising as the pan-  
acea for their business ills.—John Wanamaker.

## CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick  
and Tile Association will be held at Des Moines, Iowa,  
January 22 and 23, 1908.

The fifth annual convention of the Canadian Clay Products  
Manufacturers will be held at Ottawa, Canada, November  
19, 20 and 21, 1907.

The fourth annual convention of the National Association  
of Manufacturers of Sand-Lime Products will be held at  
Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic So-  
ciety will be held at Columbus, Ohio, February 3d and  
4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving  
Brick Manufacturers' Association will be held at Columbus,  
Ohio, February 3d and 4th 1908. Headquarters at the  
Southern Hotel.

The twenty-second annual convention of the National Brick  
Manufacturers' Association will be held at Columbus, Ohio,  
February 3d to 8th 1908. Headquarters at the Southern  
Hotel.

The thirtieth annual convention of the Illinois Clay  
Workers' Association will be held at Peoria, Ills., Jan. 14-15  
and 16th 1908. Headquarters at the National Hotel.

Subscribe for the Clay Record today.

Sand is one of the important ingredients in the elixir of  
success.

One of the ambitions of the average man is to do those  
he has been done by.

A long face gathers few friends. Put on a glad face and  
keep it so by reading the Clay Record.

Be at peace with your neighbor even if it means war with  
yourself. Don't soak him whenever the opportunity offers

It isn't because they are looking for an excuse to ap-  
plaud that the neighbors are induced to keep an eye upon  
you.

Get on the other side of the street when you see a man  
approaching who never fails to inform you that the world  
is daily growing worse.

Prosperity has much the same effect on a man as gas  
has on a balloon; two much of it will result in an explosion.  
Always keep track of the sand bags.

## BUILDING OPERATIONS FOR OCTOBER

Although building and construction throughout the United  
States has been exceedingly brisk during several years past,  
and has set a very high record, this volume is nearly main-  
tained at present, as indicated by a comparison of the past  
month with October, 1906. Official building reports from  
some fifty leading cities throughout the country received by  
The American Contractor, Chicago, compiled and tabulated,  
show that building operations continue decidedly active;  
twenty-nine cities show an increase varying from one to two  
hundred and ninety per cent, and twenty-two show a loss  
ranging from three to fifty-nine per cent; in the aggregate  
the decrease, as compared with October, 1906, amounts to  
three and four-fifths per cent. Some of the principal gains  
are: Birmingham, 97 per cent; Buffalo, 27; Cleveland, 290;  
Grand Rapids, 35; Kansas City, 25; Little Rock, 113; Min-  
neapolis, 12; Nashville, 116; New Orleans, 29; Omaha, 36;  
Paterson, 134; St. Paul, 77; Spokane, 81; Syracuse, 140;  
Worcester, 127; Wilkes-Barre, 86. Among those showing  
a decrease are: Baltimore, 34; Bridgeport, 18; Chattanooga,  
50; Detroit, 20; Duluth, 33; Hartford, 43; Los Angeles, 44;  
Newark, 26; Philadelphia, 59; Pittsburg, 36; Tacoma, 23;  
St. Louis, 54. Building operations have been exceptionally  
lively in St. Louis since the great exposition there, and this  
setback was to be expected.

## OBITUARY

James Ball one of the leading citizens of Clinton, Ill., and a pioneer died at his home of pneumonia. He was 74 years of age and was a manufacturer of brick.

J. G. Low, of Chelsea, Mass., died in a private hospital at Cambridge, after an illness of several weeks. He with his father, was the founder of the Low Art Tile Co., and was the originator of the tile soda fountain.

David McKelvey, for 32 years alderman of the second ward at Allegheny, Pa., died at the German Hospital of acute indigestion. For a time he was a well known brick maker and conducted the only brick works north of the Allegheny river in Pennsylvania.

## FIRE! FIRE! FIRE!

T. L. Kennedy, president; R. R. Hice, secretary and treasurer, and W. J. Stewart, manager.

Flames destroyed the lime kiln in the brick yard of Webster & Co., 3rd and Reed streets, Philadelphia, Pa. The prompt work of the watchman prevented a serious blaze.

A fire destroyed one of the kilns of the Baltimore (Ind.) Vitrified Brick Co., at Westport. The fire was extinguished by the employees before it got a good start.

The stock shed at the Fallston (Pa.) Fire Clay Co.'s plant on Brady's run which contained straw and a quantity of brick ready for shipment was destroyed by fire causing a loss of \$3,000, with no insurance. The officers are Hon.

## DON'T LET FEAR RUIN BUSINESS

Of what earthly use is a soldier who drops his musket and takes to his heels at the first onslaught of the enemy? Where would a nation end with an army of such soldiers? Where a business?

At present this country stands face to face with a most absurd enemy, who came like a bolt from a clear sky and wholly without cause.

That enemy is Fear.

Are you a good fighter or are you a coward? Are you going to lay down arms before this imaginary fictitious apparition, or are you going to "march breast forward" and help break down this fear in the minds of your customers?

There is no reason why merchants or anyone else should be alarmed. The backbone and foundation of this nation is its integrity and natural resources, which are in most superb condition. In fact, the land "flows with milk and honey." The only trouble is the people (some of them) are scared stiff. And about what? Absolutely nothing. Its just like a cry of fire in an opera house where no fire exists.

Fear is no person, place, nor thing. It has no actual cause—no real power. In the presence or confidence it becomes absolute nothingness and vanishes as darkness before the light.

When a snag is blown out of a river by dynamite the noise creates excitement, but the snag being removed leaves the river clear.

Several snags are being removed from the "financial river," but the explosion should cause no alarm. With the snags removed this country's prosperity will flow on greater and more powerful than ever.

## ACCIDENTS, DAMAGES AND LOSSES

The Globe Pottery Co., which took over the business of the Ironsides Pottery Co., Bordentown, N. J., has been placed into the hands of Receiver Charles B. Case.

William Lahey, the well known and wealthy brick manufacturer is critically ill at his home in New Windsor, N. Y. He sustained a stroke of apoplexy.

Peter Marks, an employee of the Chicago Retort & Fire Brick Co., at Ottawa, Ill., was badly injured at the works so he is now in the Ryburn Hospital.

Albert Goller was awarded a judgment of \$2,000 against the South Bend (Ind.) Brick Co., for the falling of a shed upon him.

M. J. Siesmore, an employee of the Altoona (Kansas) Brick Co., sustained a severe injury in the shale pit by a huge boulder falling upon him after a blast had been made.

A New York firm of expert accountants has sued the U. S. Brick Co., Reading, Pa., for \$1,250 alleged to be due for services.

W. L. Davis of Berlin, Ct., has been sued and attached on four accounts for material and labor used at his brick works. The amounts aggregate \$7,000.

R. G. Eischenhart of Horseheads, N. Y., seriously injured his spine by falling from a wagon while directing work.

Supt. Frank Whiting of the Streater (Ills.) Paving Brick Co., was seriously hurt by being squeezed between the hole in the machine room and a loaded shale car.

Vasil Strassinsky lost part of his hand in a brick machine at the Robinson Clay Products Co., Akron, Ohio, and asks damages to the amount of \$10,000 for same.

At the request of the Stevenson Co., Wellsville, Ohio, the Ceramic Brick Co., East Liverpool, Ohio was placed in the hands of receiver J. J. Martin. The claim is for \$1,058.65.

Henry Martin, an employee of the Phoenix Brick & Construction Co., St. Joseph, Mo., is suing the company for \$5,000 damages for being injured by the falling onto him of green brick that were in a kiln.

Jacob Shuck, foreman of the Chesapeake Brick Co., Baltimore, Md., threw a brick at his brother-in-law, Charles E. Lilly because he had goaded him beyond endurance. The brick striking him in the head and killing him.

## IOWA BRICKMAKERS WINNING RATE FIGHT

Brick manufacturers have scored a victory over the railroads in Iowa at the rate hearing before the railroad commissioners. The railroad men have admitted that the rate in Iowa was in excess of what it should be when compared to the interstate rate and a reduction will follow.

It was shown that the Iowa brick makers, particularly those in and near Des Moines, did not have as good a rate as the Galesburg, Ill., manufacturers.

Des Moines shippers and Commissioner Wiley were pleased with the showing made and the attitude of the officials of the railroads to accede to the demand for a readjustment.

The commissioners took the different rates and arguments under advisement and will shortly make a ruling laying advantage to Des Moines manufacturers and shippers.

# DR. FLOWER'S GREAT MYSTERIOUS, PERSIAN BRICK SECRET IS OUT

Flower's "great Persian secret" for brickmaking is out. It is free for all.

Thousands have been made through it by Dr. R. C. Flower, who solemnly declares it was revealed to him in the land of the Shah, where it is believe by some to have been discovered by one Ali Babi, who had a method of separating people from their money ages ago.

Dr. Charles B. Dotterer, president of the Virginia Clay and Material Company, a Flower concern, formed ostensibly to make "Persian secret" brick, gave out the formula yesterday, lest it should lead to a repetition of transactions which helped to make the promoter famous in New-York and elsewhere.

One of the conditions on which Dr. Dotterer accepted the presidency of the company was that he should hold the secret.

In consequence of that agreement Dr. Flower gave him the formula for the "great Persian secret" in his own handwriting. It is reproduced in The North American today.

President Dotterer does not wish his motive in disclosing the alleged secret to be misconstrued. He declares he was actuated only by the highest intentions. He believes that the investors in the stock of the "great Persian secret" brick-making scheme have been duped. Notwithstanding that on last Thursday he ordered that no more stock should be sold, he turned yesterday that Flower was still at work trying to sell it.

President Dotterer then concluded to give out the alleged "secret" in the hope that it will effectually burst the bubble.

The formula was written in lead-pencil on the back of a stock subscription blank. Flower headed the formula with a physician's prescription mark, which raises the thought whether the promoter when he wrote it was thinking of compounding either a sleeping potion or a nerve tonic.

Equal parts of gypsum cement and granite cement combined form the basis of the "great Persian secret." The other ingredients are common table salt, saltpetre, boracic acid and borax. All of these mixed together in the given proportions make what Flower calls the secret process or binder. He declares that "even dust of the street when mixed with the 'secret' will make the best brick for the least money."

It may be noted that Flower spells gypsum with a j. He also has given the quantities of the secret ingredients necessary to continue with a ton of sand and 300 pounds of clay. Here is the formula:

Sand .....	1 ton
Clay .....	300 pounds
Gypsum cement .....	250 pounds
Granite cement .....	250 pounds
Salt .....	3 1/4 pounds
Saltpetre .....	8 oz.
Boracic acid .....	2 oz.
Borax .....	3 oz.

When Dr. R. C. Flower formed the Virginia Clay and Material Company he said, according to Dr. Dotterer, that

the parent company, known as the Tri-Color Brick Company, of New Jersey, would have to be paid \$35,000 in return for the new company using the "great secret." The money was to be paid to Dr. Flower in instalments.

This provision was subsequently incorporated in the agreement, and Dr. Flower has been paid a large amount on account. No one connected with the Virginia Clay and Material Company seems to know anything further about the Tri-Color Brick Company than that Dr. Flower said it existed. Asked how the Tri-Color Company obtained possession of the "great Persian secret," Dr. Flower said that he had sold it to them. He emphatically declined to give any other information about the company.

President Dotterer and others connected with the Virginia Clay and Material Company do not believe that the so-called TriColor Company ever existed. Recent events which have thrown the light on Flower's stock manipulations incline them to believe that the Tri-Color Company was a deal of Flower's to start the ball rolling to gather money on the "great Persian secret" scheme.

Theodore C. Search, who has tried the "great secret," said that it will make a brick, but whether the brick is any good he does not know—Philadelphia North American, Nov. 4th.

## VICTORY FOR HAVERSTRAW BRICKMAKERS

The first of nearly thirty suits involving claims for a large amount brought against brickmakers of Haverstraw, N. Y., ended before Supreme Court Justice Crane at Brooklyn, on Thursday, Oct. 24th, with a practical victory for the defense. The case was sent from Rockland county to Brooklyn on the allegation of the defendants that the prejudice against them was so strong that a fair trial could not be had in Rockland County.

The action tried was looked upon as a test case. It was brought by Jonathan Deyo and John M. Gardner, of New York, former Newburgh lawyers in behalf of Minnie Adlin, wife of Elimelich Adlin, her husband. Adlin was a rabbi. 24 years old, who was killed in the big slide of the clay banks at Haverstraw on the night of January 8, 1906. Mrs. Adlin as administratrix of her husband's estate sued to recover \$30,000. Mrs. Adlin also sued on behalf of her child, which was born four months after her husband had been engulfed in the disaster.

The action was entitled Adlin vs. the Excelsior Brick Co., of which Lucien Washburn is the president; Everett Fowler, general manager of company, James W. Gillies, who owned a yard adjoining the Excelsior plant and Nicholson & Riley, tenants.

The trial of the action occupied more than three days. The jury finally disagreed, the twelve men standing 8 to 4 in favor of the defendant.

Stephen C. Baldwin, of Brooklyn, appeared for the Excelsior Brick Co., Judge A. H. F. Seegar, of Orange County, for Mr. Gillies, Charles Morschauser, of Poughkeepsie, for Nicholson & Riley. Judge Seegar succeeded in getting the complaint against John W. Gillies dismissed.

The kilns at the Perryssville (Ohio) Pottery have been completed. They are 45 feet high and 21 feet in diameter.

### A PARTIAL LIST OF SUBJECTS ON THE N. A. M. S. L. P. PROGRAM

The annual meeting of the National Association of Manufacturers of Sand-Lime Products will be held in the Chittenden Hotel at Columbus, Ohio, December 4, 5 and 6th, 1907. A part of the program is as follows:

The Power Plant.—T. M. Jackson, Saginaw, Mich.

Advanced Methods of Cost-Keeping.—John L. Jackson, Saginaw, Mich.

Steam, Gas and Electricity Compared for Power Purposes on Sand-Lime Plants.—W. J. Carmichael, Willoughby, O. Mixing vs. Pressure in Securing Density.—P. L. Simpson, Chicago.

The Essential Conditions of Manufacture for the Production of a Uniform Sand-Lime Product.—J. Harry Allen, Winchester, Ky.

Sand-Lime Bi-Products.—Clark Mellen, Denver, Col.

The Manufacture of Lime and Its Preparation for Sand-Lime Brick Manufacture.—S. V. Peppel, Columbus.

A number of other interesting questions will be dealt with, which will be duly announced in the program.

### ACTION TAKEN BY MANUFACTURERS AT EAST LIVERPOOL

East Liverpool, O.—At a meeting of manufacturers of this city, it was decided that an offer would be made the workmen to pay them for their labor part cash and the balance in script, or all script, as the case might demand, this script, payable at a designated bank at an uncertain date, but as soon as the present stringency of the money market is relieved. The proposition was at once submitted to the employees of the Knowles, Taylor & Knowles pottery and the men decided to accept the offer and continue work. This script is merely a due bill payable at an uncertain date. The merchants have decided to take this in payment for goods and debts and the banks will receive it on deposit with the understanding that it is not subject to check until the signers of this script announce to the bank that they are ready to take up the same. It is following the course pursued in Pittsburgh and other eastern cities as a protection to banks and manufacturers. By this course the plants of the city will be kept running as heretofore, and business will remain undisturbed. It is the general opinion that present conditions will be of very short duration and the present precaution is taken to prevent financial disaster, on the recommendation of prominent financiers.

### EX-PRESIDENT OF N. B. M. A. SERIOUSLY HURT

While superintending some work at his extensive brick manufacturing plant, R. G. Eisenhart, of Horseheads, N. Y., fell from a wagon on which he was standing, and seriously injured his spine. He is under the care of his physician, with a trained nurse in attendance and members of the family expressed the hope that the painful injuries are not so serious as at first feared.

The accident happened at about 4:30 o'clock, Nov. 2nd. Mr. Eisenhart had been directing some carting, and stood upon a platform wagon when the team started suddenly, throwing him to the ground. Employees of the yard ran to his assistance, and he was carried to his home as quickly as possible.

### PORTLAND PLANTS HAVE HAD GREATEST YEAR IN THEIR WHOLE HISTORY

The score or more brick manufacturing plants in Portland, Oregon, and vicinity have with two or three exceptions closed down for the winter, after the most successful year's business in the history of brick making in the city. The daily output of the eighteen city yards is about 450,000 brick ranging in value from \$10 per thousand for the ordinary rough brick, to \$40 for the highest class of pressed finishing brick. There is about \$650,000 invested in the making of brick in Portland and vicinity, which estimate does not include the cost of the two cement brick plants, at St. Johns and Sellwood, both of which have been in successful operation during the past summer.

Nine-tenths of the brick made in this vicinity are the product of either the stiff mud wire cut machines or the soft mud high pressure machines.

The Newberg dry pressed plant has a daily capacity of 20,000 and the daily output of the Portland Brick & Tile dry pressed plant is 15,000. The product of these two plants is largely used for the outside finish of the larger business blocks.

The Western Clay Manufacturing Company uses a shale in the manufacture of brick, which is brought from North Yamhill, is ground to a fine powder and then put under a tremendous pressure. The handling of the product of the Portland brick yards has been very much simplified in the past year or two. Formerly a great deal of time and energy was wasted in hauling the brick of one yard to a job which was perhaps three or four miles from the yard, while there may have been a brick yard within half a mile of the place the brick were wanted. In other words it was no unusual thing for an east side yard to deliver brick to a building going up on the west side. Now, however, a great deal of this extra hauling is done away with by the establishment of a central agency by Nottingham & Co., who represent 12 of the largest yards, selling the combined product on commission. Under this arrangement, brick for the hundreds of buildings going up in all parts of the city are supplied where wanted from the yard nearest the job.

Brick manufacturers anticipate a good demand for their product during the coming building season. The large number of extensive buildings projected for next year together with those already contracted for practically insures another good year in the brick business in Portland.

### NATIONAL GLASS BRICK COMPANY OFFICIALS SATISFIED WITH EXPERIMENTS MADE

It has been stated by a stockholder in the National Glass Brick Company, Coniellsville, Pa., that the tests made of the brick manufactured near the proposed location of the brick plant near Trotter on the Johnston-Gallagher farm, were entirely satisfactory and that the company would immediately make preparations for the erection of a plant.

From an official source it was learned that the company proposes to erect seventy-five workmen's houses on the property and will let the contract as soon as contractors have finished their estimates upon the plans. The location for the houses is an ideal one. The company expects to get the plant in operation by spring.

## CLAY RECORD.

### BRICK LIFTING MACHINE INVENTED BY CAPT. ISRAEL THAT WILL REVOLUTIONIZE BRICK TRANSPORTATION

Capt. William P. Israel of Portsmouth, N. H., has for four years been engaged in perfecting a brick lifting machine for loading and unloading barges. This machine has now been perfected and a machine built and ready for operation. With this machine two men can handle 25,000 to 30,000 per hour, either loading or unloading a vessel, doing the work of from fifteen to eighteen men. It does away with all breakage, thus making it safe to handle the finest of bricks, and also keeps accurate count of the number of bricks hoisted. It takes for a hoist 750 bricks, two hoists filling a New York cart.

By the use of this machine only one handling is necessary; the bricks being once piled at the kiln on a truck in 750 lots are run down to the vessel where the machine takes them up and sets them in the vessel. Upon arrival at the destination the machine takes up the bricks in 750 lots and sets them in the cart in waiting.

Capt. Israel was the originator of the Piscataqua Navigation Co., which has been such a financial success in the transportation of brick. With this invention the whole brick transportation will be revolutionized, for by this machine bricks will be loaded and unloaded in large quantities by machine instead of by hand. Nothing of the kind has ever before been invented.

A lifter is now on exhibition in the building adjoining the P. K. & Y. ferry landing in this city, where it will be on exhibition daily from 11 to 12 a. m., and explanation given by Capt. Israel in person.

It is the purpose of Capt. Israel to form a barge company to be known as the American Brick Barge Company with a capital stock of \$50,000 divided into 1,000 shares of \$50 each. As soon as sufficient capital has been subscribed to build one barge costing about \$12,000 with a carrying capacity of 300,000 bricks the subscribers will be notified and ten per cent of their subscriptions called for and receipts given. In December 50 per cent additional will be paid in for the vessel and in February the final 40 per cent will be paid and stock certificates issued.

Of Capt. Israel's practical experience in the building of vessels it is perhaps unnecessary to speak. It may be said however that he has built eleven vessels, including barges, schooners and steamboats.

### DOING A RUSHING BUSINESS

The Salmen Brick and Lumber Company, Sidell, La., in the past twelve months manufactured 27,834,204 brick, 17,152,120 feet lumber, 11,904,000 cypress shingles, 1,950,000 laths, and pine piling, if in one piece sufficient to reach from New Orleans to Ellisville—132 miles—and disbursed for labor \$286,900.61.

The Clay Products Co., of Texarkana, Ark., has been incorporated with \$25,000 capital stock and purchased the Parkhurst Pottery north of town and will enlarge it to four times its present size. John T. Owsley is president, Ralph G. Moore, vice president, F. W. Mullins, treasurer, and L. E. Howe, secretary.

### SLATE WASTE FOR BRICK

The use of slate waste in the manufacture of brick has been revived. The Virginia Clay and Material Company, Farmville, Va., has purchased the property of the Lehigh Granite Brick Company, lying between the Central Railroad of New Jersey and the Lehigh Valley Railroad, near Allentown Pa., and will start work manufacturing a superior grade of building bricks. In the manufacture of the brick, which will be an ornamental faced building material white sand, white clay and the waste slate that is found in perfect mountains about all of the slate manufacturing plants and around the many quarries will be utilized. The company located will be the parent company for eight counties, the district comprised of Lehigh, Luzerne, Northampton, Carbon, Schuylkill, Lancaster Lebanon and Lackawanna counties. The company will buy or erect new manufactories wherever the conditions are satisfactory for the work.

### A BAN PLACED ON FREIGHT CAR ADVERTISING

The ban placed upon freight car advertising by all railroads in the United States has aroused a storm of protest from shippers in every part of the country.

Officials of the various roads are receiving complaints daily from shippers who do not like the order the Master Car Builders' association put into effect on September 1. The railroads, however, will not recede from the position they have taken.

Much advertising matter on box cars is being destroyed daily for being used after the issuance of the prohibitive order, and the cost of removing signs from the cars is being charged to shippers.

One slight concession has been granted in some instances by the railroads for the time being. Many big shippers had quantities of car advertising material on hand, and the railroads have given them until January 1, 1908, to get rid of this material.

"The railroads will not recede one step from the stand they have taken against box-car advertising," said one of the big trunk line officials. This method of advertising grew to such proportions that the master car builders were forced to take some action against it.

"Some shippers nailed their advertising signs on all kinds of cars, whether laden with their own shipments or not, and they used big ten-penny nails. These nails often penetrated the goods inside the car and damaged them as well as the cars. Others put signs on the cars with glue, and it cost us time and money to remove them. The privilege of box-car advertising was abused to such an extent that our cars were soon the unsightliest of objects.

"We're getting lots of complaints from the shippers, but they have complained of other things, too. We're removing advertising signs now, and the shippers are paying the cost."

The National Brickmakers' association has sent letters to executive officials of all the railroads, complaining vigorously against the advertising prohibition. They admit that the custom has become a nuisance. They contend, however, that the railroads should not put a general ban upon the practice, but should fix a standard size for all advertisements placed on cars and provide for their being properly affixed.

The brickmakers propose that advertisements used in this way should bear only the name of the shipper, the name of the consignor and the point of delivery.

## SAND OR LIME BRICK OR BLOCK NEWS

The San Antonio Brick Co., San Antonio, Texas, has completed their 40,000 capacity sand lime brick plant.

The Indiana Sand-Lime Brick Co., has sold their plant in Indiana and will probably erect a factory at Waycross, Ga.

The Diamond Stone Brick Co., of which Edward S. Neilan is president, was in New London, Ct. to find a location for its new plant. The company makes brick from sand.

The Los Angeles (Cal.) Pressed Brick & Crushed Stone Co. commenced building their large plant between Burbank and San Fernando, where large deposits of granite has been found.

The Lehigh Granite Brick Co.'s plant at Allentown, Pa. has been sold to A. D. Flower for the Virginia Clay & Material Co., of Farmville, Va., who will at once make brick under their process, which uses white sand, white clay and waste slate from the quarries.

The Luverne (Minn.) Pressed Brick Co., which was incorporated a short time ago with \$55,000 capital stock has its new plant ready for operation and will begin work as soon as lime is received. The plant is equipped with a 125 h. p. engine, 150 h. p. boiler, a rotary sand dryer, fan, and lime crusher, automatic measuring machine, tube mill, pug mill, two silos and a four mold Boyd dry press. The plant was purchased complete from the Memphis Granite Brick Co. J. E. Joyner, of Memphis, Tenn. superintended the moving.

The Interstate Pressed Brick Co. has been incorporated with \$100,000 capital stock at St. Paul, Minn., by C. H. Watson, F. T. Day and G. L. Rolfe.

George E. Dungan, receiver for the Daleville (Ind.) Sand Lime Brick Co., has made his final report and sold the property which has been approved by the court.

The receivership of the Savannah (Ga.) Sand Lime Brick Co., whose plant it at Eden, has been continued. The plant is making money and will work out its own destiny.

A. T. Pooley, 1615 No. Weber St., Colorado Springs, Colo., will build a plant at a cost of \$10,000 for the manufacture of cement blocks, brick, etc.

The Illinois Granite Brick Co., Chicago, Ill. has been incorporated with \$250,000 capital stock, by Oscar M. Stefens, Joseph A. Grober, and Arnold D. McMahan.

A. B. & Brooks Fleming have chartered the Western Company of Fairmount, W. Va., for the purpose of manufacturing stone, brick and other building material. The capital stock is \$160,000.

The Hansen Sand Lime Brick Co., Hansen, Ga., will enlarge its plant to three times its present size necessitating the installation of additional sand lime brick machinery, presses, cars, etc.

If you are interested in the sand lime brick industry do not fail to attend the convention of the National Association Manufacturers of Sand Lime Products which will be held at Columbus, Ohio, December 4-5-6th, 1907. Headquarters will be at the Chittenden Hotel.

# The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

## CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc. are left down to a point four feet below the coal floor line of the ordinary continuous kiln, the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



**WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.**

## MISCELLANEOUS ITEMS

Del Rio, Texas is soon to have a brick making plant. W. J. Stites has sold his tile factory west of Van Wert, O., to N. O. Tindall, and he has already taken possession.

John Harris of Barron, Wis., will build a plant to make brick at Ladysmith, Wis., in the spring.

A kiln has been rigged up at the Walker Veneer plant, Alpena, Mich., in which to burn brick, tile, etc., in experimenting with the clay from W. T. Jones' farm in Grein.

The Thomaston (Maine) Face and Ornamental Brick Co., has been organized and is now called the St. Georges' Brick Co.

The Peebles Brick Works at Portsmouth, Ohio, is to be enlarged in order to take care of the demand for their goods.

The Summitville (Ind.) Drain Tile Co., has just completed a two story brick dry house which will double their drying capacity of tile.

A movement is on foot to start another brick plant at Brazil, Ind., for the manufacture of paving brick. \$100,000 will be spent in the undertaking.

The Friars Point (Miss.) Brick & Tile Mfg. Co.'s, plant which has been shut down for several months will be started up again at an early date.

T. E. McDow, receiver for the McNeil Pressed Brick Co., Newburn, Ill., is operating the plant under the receivership.

The Grand Ledge (Mich.) Clay Products Co., has recently installed a dynamo of their own and are now able to supply their own light.

The Dillsburg (Pa.) Vitrified Brick & Tile Co., have installed, a new 150-horse-power engine and two 100-horse-power boilers in their plant west of town.

The Hocking Valley Brick & Terra Cotta Co., Columbus, Ohio, which intended building a large clay plant in the Hocking Valley, has surrendered its charter to the state.

The Commercial Club of Falls City, Neb., have some shale on exhibition that if proved satisfactory they will organize a brick plant there.

The Gulf States Brick Co., which owns two large brick plants in Beaumont, Texas, are now changing their burning system and will burn with wood instead of oil. They claim that the oil at the present price costs too much.

The plant of the Albany (Ga.) Brick Co., has been greatly improved this year. They have purchased land across the Flint River and will erect an aerial cable tramway to carry clay to the plant.

The Youngstown, (O.) Roofing Tile Co., has been incorporated with \$50,000 capital stock to manufacture tile for roofs. The officers are John R. Squire, E. H. Turner, C. Thornton, C. W. McNab and Will B. Jones.

The Clarendon (Vt.) Clay & Mining Co., has been incorporated with \$50,000 and will erect a \$15,000 clay plant. The officers are J. C. Bump, of Ticonderoga, N. Y., president; G. H. Bump, of Brandon, Vt., secretary, and W. W. Jeffrey, of Ticonderoga, N. Y., treasurer.

The Carlyle Brick plant at Portsmouth, Ohio, has constructed a wall or dyke nearly one-half mile in length on the Ohio river side of their plant to keep the floods off the plant.

The Frankfort (Ind.) Brick & Construction Co. will sell its brick works and devote their entire time to other matters.

The Davy Burnt Clay Ballast Co., Kenosha, Wis., has forwarded to the state secretary an amendment decreasing its capital stock from \$500,000 to \$120,000.

The Columbia Brick & Plaster Co., Belaire, Md., has been organized to operate the plant of the old Maryland Art Brick & Tile Company.

The Scanlon Brick Co., Crescent, N. Y., has been awarded a contract to furnish 2,000,000 brick to the new yarn mill.

The machinery for the Baldwin County Brick & Pottery Co., Milledgeville, Ga., is being installed and will be in operation within a week.

William F. Stimmel, Kutztown, Pa., will build a dryer so as to be able to manufacture brick during the winter. The demand for brick from his kilns is more than he can supply.

The Eastern Illinois Brick Co., Beecher, Ill., resumed work at its plant after a three weeks' shutdown to make repairs and build additions.

Mr. Kelsh, manager of the A. C. Wood Brick Co., Corona, Calif., states that he has received orders to commence the erection of buildings and sheds for the plant at once.

Louis Vogle, of New York City, is at Weir, Kansas, arranging for the installing of another brick plant to utilize the immense body of fire clay underlaying his land south-east of town.

The Watson, Malone Miller Co., Fairmont, W. Va., has been incorporated with \$180,000 capital stock for the purpose of manufacturing, buying and selling stone, brick, lumber and other building materials.

Work has been started on the \$15,000 plant of the Clarendon (Vt.) Clay & Mining Co., which has been incorporated with \$50,000 capital stock. L. C. Bump, of Brandon, is president.

The Brooks Brick Co., Brewer, Maine, have put in their first round down draft kiln, the first in that section of the country. H. N. Brooks, formerly of Orrington, has charge of the yard.

The big brick plant of the Tennessee Brick & Mfg. Co., Chattanooga, Tenn., is delivering its goods from the new Cities plant, Robert B. Henderson, president of the company says the product, and plant is satisfactory in every way.

The Philadelphia Land, Building & Mfg. Co., 1220 Real Estate Trust Bldg., Philadelphia, Pa., will erect a brick plant in that city during the winter and wants information regarding brick machinery. Rhoads Shee is the general manager.

The new brick plant of the Columbus (O.) & Hocking Coal & Iron Co., at Kachelmacher, Hocking Co., has been running for two weeks and it pleases its owners with its product. Next spring other plants will be built by the same company in the same locality.

The Empire Brick & Gas Co., Joplin, Mo., is now building at New Albany, Kansas, a modern brick plant that will employ 65 men to operate the building when all completed ready for the machinery. After this plant is completed a second brick and tile plant and glass factory will be built by them.

A recently organized company is preparing to reopen the clay works at North East, Md.

Henry Bruaw & Son, Cerro Gordo, Ill., have decided to quit making brick and tile and will sell the plant which has been profitable for 25 years.

The W. S. Dickey Clay Mfg. Co., of Kansas City, Mo., has been awarded the contract to furnish sewer pipe to the city of Lincoln, Neb., for the year 1908.

A large deposit of valuable fire clay has been found near Canton, N. Y., and there is a possibility of a factory being built for the manufacture of brick and tile.

The National Pressed Brick Co., of Illinois, has filed articles to show that it has been incorporated with \$24,000 capital stock, of which \$500 is to be employed in Missouri with an office in St. Louis.

The Houma (La.) Brick Co. is a valuable addition to that town. The y recently have installed a E. M. Freese & Co. outfit of 25,000 capacity and are making excellent brick. M. H. Webb is the secretary and manager.

The Quaker Valley Clay Co. sold its plant at Rogers, O., to the Connor Sewer Pipe Co., of Toronto, O. Charles Reddick, who has been the superintendent, will take charge of a plant at New Philadelphia, O. John Elliott, of Lisbon, was the largest stockholder.

Sylvester W. Cramer and associates, who have been conducting The Pittsburg Brick Co. works, located near Franklin, Pa., have made a new deal and the concern will hereafter be known as the Franklin Shale Brick Co. and will turn out a larger output than formerly.

The U. S. court has granted the receiver the right to operate the Montello Brick Works plant at Perkiomen, Pa.

The Entrees Brick Co., Pittsburg, Pa., will erect twenty dwellings at Webster Ave. and Kirkpatrick St., Pittsburg, Pa., at a cost of \$60,000.

G. W. Hadley, owner of the Northwest mine at Jasonville, Ind., is making preparations to build a shale brick plant, which will employ 150 hands.

The National Glass Brick Co., Connellsville, Pa., will immediately make preparations for the erection of a plant. Satisfactory tests have been made.

After one of the most successful seasons in the history of the company the Drury Brick & Tile Co., Essex Junction, N. H., closed down the yard for the season.

The Iola (Kansas) Portland Cement Co. has been granted a charter with \$4,500,000 capital stock. The fee to the state of Kansas was \$2,327.50. It will build a factory at Iola.

The Gulf States Brick Co., Beaumont, Texas, will install new equipment to its plants, adding besides other improvements a complete dry press outfit, dryers and down-draft kilns.

The Ellwood Brick & Limestone Co., Ellwood City, Pa., has been incorporated with \$30,000 capital stock by Thos. J. Folmer and Frank Douthitt, of Ellwood City, and John Montgomery, of Sewickley.

Robt. H. Pelyfe, until recently superintendent of the Newburgh (N. Y.) Brick Co., has bought a grocery at 212 Broadway and retired from the brick business. He was seriously injured some months ago by being caught in the belting at the works.

## **The GILLETT DOORLESS Hot Air FIREBOX For Blast Kilns**

Patent No. 792,769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog, and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

**A. GILLET & CO.,**  
Factory, St. Louis, Mo. **ALEDO, ILL.**

## **DIRECT HEAT**

# **DRYERS**

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**  
62-64 William St. **NEW YORK CITY**



## CLAY RECORD.

## DUMP CARS FOR SALE

A few good "Main Line" Dump Cars. Will be put in A-1 condition. Write for description.  
Detroit Car Building and Equipment Co.  
Detroit, Mich.

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is filled, factories are offered complete, or in part. Have several Brewer Mills for sale, and others.  
Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or will write  
Brick and Tile Machinery  
Secor, Ill.

## FOR SALE

One Quincy Clay Machinery and P. W. Brand new, in use only two weeks. Address  
Rik City Brick Co.  
Rik City, Kansas.

## FOR SALE

One power Presses, to number one condition, used only just a short time; capacity 3000 per day. Ask for full particulars.  
American Framed Brick & Tile Co.  
1 Madison Ave. New York

## NOTICE

To American Clay Machinery Manufacturers—A sound proposition for N. W. Alberta. Can. Articles of Association have been sent to Eastern Brick & Tile Co., Ltd., for \$2000 of 200 shares at \$100 each at par. To equip a complete brick making plant on field of 60 acres, joined at all feet and analyzed by the Henry Martin Brick Machine Mfg. Co., of Pa. U. S. A. whose tests are satisfactory for a good sound brick.

The situation of the field is close to the Railway siding of Claymore, on the C. N. R. 6 miles from Vermilion City. The full cove of the famous Saskatchewan Valley, and the Vermilion district, where brick are now selling at \$20 per thousand and in great demand at this time.

We desire to correspond at once with any firm who will put a fully equipped up-to-date plant on the field on an acceptance backed by fully paid up stock, who may recommend a capable manager, to engage himself with our company if salary agree upon. Address

ALEXANDER EASON  
Pioneer Builder and Contractor  
Vermilion, Alta

Solicitor  
K. V. Fieldhouse, Esq., L. T. B.  
Vermilion, Alta

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 8000 per hour. Greatest bargain. Write for particulars.  
GREAT BANTER CLAY CO.  
20 Cortland St., New York

## WANTED

12 offices covering entire brick, clay and building material field. Positions open for office, sales and technical men. Service confidential. Experience, age, experience and location desired.

HARRISBROS.  
305 Broadway, New York City, or  
1010 Hartford Bldg., Chicago, Illa

## FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address  
Lock Box 25 case of CLAY RECORD  
Chicago, Illinois

## BRICK YARD FOR SALE

Old established yard in good town of 18,000 people, with good country surrounding. 40 acres good kilns and sheds. Good reason for selling. Call on or address  
CHARLES MCNEAL  
Maryville, Mo.

## FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand for brick at \$1.75 to \$10.00 per thousand. Fine clay seven feet deep. Good machinery, good water, plenty of wood free for hauling less than 3 mile. Plenty of labor and 400,000 brick now contracted for. Good reason for selling. No competitors. Address  
GEORGE BARNY,  
Leesville, La

## FOR SALE

One No. 2 Potter & Co. Clay Disintegrator, Used only six months. Address  
C. MULLINBERRY, SOX  
Aurora, Illinois

## BRICK PLANT WANTED AT JACKSONVILLE

One of the best places in the whole country to establish a small up-to-date modern brick plant, local consumption 300,000 annually. Abundance of good clay. No competition. Will give detailed information upon application to the

BUSINESS MEN'S ASSOCIATION  
Jacksonville, Illinois

## FOR SALE.



Right and left-hand One, Two and Three Way switches of various gauges, rails and wheel rail, at special prices.

THE ATLAS CAR & MFG. CO.  
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 18 lb. 20 and 30 pound. For prices, address  
ATLAS CAR & MFG. CO.,  
Cleveland, Ohio.

## KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of kaolin ever mined in Georgia, on the south of  
L. T. LEE, Zephth, Ga.

## PLANT FOR SALE

A good steam brick plant for sale. Chambers Bros. Co., brick machinery, engine and boilers in first class order. Lease expiring.

JOHN HANFATY & SONS  
St. Louis and St. Louis  
Philadelphia, Pa.

## FOR SALE

Brick manufacturing plant, capacity 4000. Six mould dry press, small planing mill and lumber yard. Good shipping territory and no established paying business. Address  
4 J. CARE OF CLAY RECORD  
Chicago, Illinois

## PLANT FOR SALE

A practically new brick and tile plant in north west Missouri for sale on account of health have decided to sell at about one-fourth cost. Well mud and still mud machinery, engine, boilers and sheds for 6000 brick daily. Two clamp kilns and Stewart kilns. Plant runs steadily and can't supply the demand at good prices.

Write to J. WYNN  
Weldon, Iowa

## PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Claytown County, Iowa. For particulars write  
S. L. CLARK,  
Redfield, So. Dak.

## WANTED

Wanted a small dry kiln on good condition. Parties answering this advertisement will please give the name of the maker of the pao. together with best price.

CLEMENT JUNGERS  
Greaser, Illinois

## PARTNER WANTED

A good, reliable man, with experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address  
DENIS, care Clay Record  
Chicago, Ill.

## FOR SALE

A fine Kaolin bed of 100 acres, with strata of excellent clay from 12 to 18 feet deep, light over burden of soft sand, good steam kilns and sheds. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address  
J. B. SULLIVAN, Attorney  
Aiken, S. C.



Four Jagers quoted.  
H. A. HART, 41 White St.,  
BATTLE CREEK, ILL.

In better case, of 100  
\$1 and 100 lb.  
4 Wheel, \$3.00  
8 Wheel, \$3.25  
Overland  
Sold at 100 lb.  
BATTLE CREEK, ILL.

## BUSINESS WANTED

I can sell any business or real estate that is not able, no matter where located. I reach the people who buy. A trial will convince you. Established in just 1 day. If you want to buy or sell, address

FRANK F. CLEVELAND,  
1726 Adams Express Building  
Chicago, Illinois

## FOR SALE

Fifteen thousand dollars of the Treasury Stock of the Liberal Brick and Tile Co. Capacity of plant when complete. No unutilized brick per day. Ready market at Kansas City and Springfield, Mo. Object in selling, to complete plant.

LIBERAL BRICK & TILE Co.  
Liberal, Mo.

## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT.  
Care Clay Record, Chicago, Ill.

## FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter with swift and accurate adjusting table. This machine is brand new, hot and we want the room immediately and will accept any reasonable offer.  
BAKER IRON WORKS  
Los Angeles, Cal

## CARS WANTED

WANTED—Second hand cars and truck. Give lowest price and condition in first letter.

Box 51.  
Independence Iowa

## PALLETES FOR SALE

We have a large number of second-hand wood pallets, size 34 by 10 inches. Can be bought cheap.

Box 567  
MARTIN  
Lancaster, Pa.

## POSITION WANTED

Position as Superintendent or Manager of Paving Brick Plant, thoroughly competent to take charge of construction and operating in every detail. Have good position at present, but dislike location. A reference by American Clay Working Machinery Co.

PAVER, Care of CLAY RECORD  
Chicago, Illinois

## FOR SALE

One No. 36 special double shaft pug-mill, top and bottom discharge, 12 foot, good condition, manufactured by American Clay Working Machinery Co. Sandusky Portland Cement Co.

Sandusky, Ohio

## FOR SALE CHEAP

On the Pacific Coast, One Eagle Double Mold Press, practically new.

BELLINGHAM BRICK & TILE CO.  
South Bellingham, Wash.

## ASTORIA

One of the best places in the whole country to establish brick and tile plant. Now having all available clay scientifically lewed and will give detailed information upon application. Large quantities all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

700 Chamber of Commerce.  
Astoria, Oregon



Vol. XXXI. No. 10.

CHICAGO, NOVEMBER 30, 1907.

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Single Copies, 5 Cents

### PRESIDENT MILLER'S ADDRESS TO THE CANADIAN CLAY PRODUCTS MANU- FACTURERS AT OTTAWA

It affords me great pleasure to welcome you to this, our sixth annual convention of Canadian Clay Products Manufacturers.

It is an honor, and I deem it such, to have the duty devolve upon me of welcoming you on this occasion, especially meeting as we do in the capital city of our Dominion, with its magnificent buildings, beautiful scenery, extensive manufacturers, and best of all, its hospitable people.

It is gratifying indeed to look around and see so many from all directions and remember how far many of them have come specially to be present with us and take part in the discussions.

Experience has taught us it is good to come together at least once a year and compare notes.

The program, arranged very carefully, and papers on which much valuable time has been spent, and the discussions following the reading of which bring out so many valuable points, is only a very small part of the work performed.

The lobby talks, where we meet those who have mastered troubles such as we are up against and are willing to help us overcome them or suggest ways to us at any time must not be overlooked.

Then we have our exhibition room, where you meet the dry press man and the stiff mud advocate, and all other kinds of machine men; the fellow who has all competitors skinned in drying brick, and the one who cuts them faster than they can possibly be handled. There is no doubt we will find the kiln man, too, who requires almost no fuel to burn with, a very desirable acquisition, too, just now. I like to meet the man with a hobby, who at any rate appears to believe in it themselves, and try to make you believe in it, too.

We have experienced another year of phenomenal prosperity in Canada from Atlantic to Pacific. From every quarter comes the word, "We could hardly fill our orders." My, we like to have it so.

Many changes in conditions have arisen during these last few years which can not fail to have been noticed.

The time of the year is near at hand when we must reckon on what has been made during the season of what seems to be a very large turnover.

Most of us have been enjoying what we call good prices, but with increased cost of fuel, labor, transportation, etc., many will find the net profit will not be as great as we would wish.

These are some of the problems we must try and seek a solution for, viz.: The production of the best brick possible and the delivery of them to the customer in the best possible condition, at the least cost to ourselves, so as to provide against a day possibly not far off when cost may not be materially reduced, but selling prices may have dropped.

There is another matter being continually rung in on all who are engaged in the brick business, and this, I think, is worthy of notice.

We are being reminded every little while by parties interested in having it so, of course, that in a very short time brick will be a thing of the past as a building material, being supplanted by cement, iron, etc., etc.

While we do not believe there is any material in the world which will ever approach a well-burned clay product for construction purposes, either as regards rapidity of construction or safety, nor yet on sanitary grounds under normal conditions, nevertheless we begin to ask why all this agitation for a change?

Will we not remember brick is a tried, trusted and proven material, its use dating back almost to the beginning of time. There must be some cause.

Is it to be found in scarcity of raw material? No, for we say the everlasting hills are scarcely scratched yet, to say nothing of what is below.

Is it scarcity of fuel for burning our product? No, I would say not, for while there has generally been a considerable advance in prices, yet there seems to be plenty of fuel.

Is the quality of material manufactured in this country of such a character that a change is absolutely necessary for safety of life and property? There may be places where a

## CLAY RECORD.

little more care, both in making and burning would improve the reputation of manufacturers, but the quality of brick required in all our large cities, especially on mercantile and government buildings, is such that it has led manufacturers to improve their plants with a view of turning out the best brick possible, and I am free to say, on the whole, I believe we compare more than favorably with other countries, we being but striplings in years as compared with some of them.

I have heard it stated, and would like very much to know if it is true, that the reason for all this agitation was to be found in the fact that it cost altogether too much to have the brick placed in the wall after being delivered on the work, and that by using these other materials a class of labor (almost entirely foreign) wholly unskilled, and most undesirable as citizens, can be utilized.

Yet we are told they can be controlled by the men who pay them, while on the other hand the claim is made they are at the mercy of the trade union, whose members work when they like, as they like, demanding the highest wages.

If these assertions are true it brings us face to face with a serious problem, and one which our friends who pay for the brick would do well to look carefully into.

Are an honorable class of skilled mechanics who build structures of material that defy the ravages of the elements and time itself, are these good citizens to be supplanted by those who have no aspirations to ever become citizens? And are our public buildings and homes to take the appearance of plastered or rough-cast tenements on the back streets and poorer quarters of our cities, simply because a common ground has not been reached between those who buy our products and those who make them take the form of buildings.

There is food for serious thought here for the manufacturer, the purchaser, the bricklayer and helper, and surely for the glory of our land and beauty of our cities and homes there should be a reasonable and satisfactory solution.

I confess when passing a cement building to a feeling something like one experiences when entering a morgue. There is nothing bright and cheery, as there is to be found in a brick structure.

Our life work is an honorable and noble calling, building up and beautifying this great country. Let use see to it we do our part well, and let me hope the discussions which arise may help us to do better than ever before.

Our time and session is limited, so I hope every one may be in their places on time and facilitate in every way possible the business before us, and may we have one of the most successful and profitable conventions ever held, not only in Canada, but anywhere else.

I soon shall vacate the presidential chair, and hope you may extend to my successor the same considerate treatment and co-operation in the work of the association which has been accorded me. It has been a pleasure to serve you.

The O'Kelly Brick Company of Ashland, Kentucky, have placed contracts with the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa., for the erection of a "Martin" 30,000 daily capacity patented rack pipe steam brick dryer complete including automatic coable delivery system.

## ANDREW F. BARRON

We are pained to chronicle the death of Andrew F. Barron, which occurred November 21st, at Toronto, Ontario. Mr. Barron was born in St. Mary's, Ontario, and was fifty-seven years of age. He came to the United States over thirty years ago, engaging with the firm of Wolff & Curran, at Chicago, as lumber dryer specialist, later taking up the drying of all kinds of clay goods. It was in this work that Mr. Barron became most proficient.

In the late eighties the firm changed to the Wolff Dryer Company and Mr. Barron was advanced to the position of chief engineer and dryers for clay works were manufactured exclusively. The experience of the drying of clays from all sections of the country made him an expert on the subject. His investigations of the clays were always careful, thorough and exact. If he thought he could not handle them satisfactorily he was never slow in informing the customer of the facts, thus making many friends.



ANDREW F. BARRON

In the year 1898, A. F. Barron succeeded the Wolff Dryer Co., and in the fall of 1902 the firm was again changed to the Barron Dryer Company, taking Mr. Alfred E. Barron into the firm, now located at 84 La Salle street.

About a year ago, Mr. Barron and associates organized what is known as the Barron Brick Company, Ltd., at Toronto, Ontario, to build a large brickmaking plant at Weston, eight miles from Toronto at the intersection of the Grand Trunk and Canadian Pacific railways. A fine deposit of shale land was purchased and machinery was being installed so that if Mr. Barron had lived the plant would have been ready to operate within a month or so. It was while superintending the construction of this plant that he was stricken down with a paralytic stroke.

He leaves a wife, son and daughter to whom we extend our sympathy. With pleasure we recall his high attainments, gentle bearing and disposition which he leaves as a heritage to his friends and associates.

### TO PREVENT TILES FROM "STICKING"

It is well known that the ordinary flat roofing tile has a great tendency to stick to others whilst being fired in the kiln, but this is usually due to careless setting or to overfiring, and the remedy may be easily found with a little care.

When, however, the tiles are made with a mouthpiece attached to the pug-mill or press, they are often, for economical reasons, made two or more at a time from the same press, the two bands of clay being produced one above the other, with the upper band bending downwards, and finally resting on the lower one.

This method of working has the advantage of occupying little space and plant in comparison with the output, but unless proper precautions are taken it will be found difficult to separate the two strips of clay from each other—particularly when they have been partially dried—without damaging one or the other of the tiles.

Clays differ greatly in the tendency which they have to adhere to one another when two pieces of the pressed material are laid on each other, but it will generally be found that the more plastic the clay, and the softer it is, the more likely will it be to adhere. Acting on the experience, R. Hielcher has recently published the following seven suggestions for preventing clay tiles in the green state from adhering with such tenacity to each other that they cannot be separated without breaking one or the other.

1. The addition of burnt clay ("brick dust") to such an extent as will overcome the excessive plasticity of the clay will often prevent the sticking, but care must be taken not to use too much of this burnt grog, or the tiles will not be properly shaped owing to the shortness of the clay. Sand, if of suitable quality, will often serve instead of burnt clay.

2. Storing the clay for some time in a well-worked state—that is, just before it is ready to be made into tiles—will often assist in the manufacture of tiles from an otherwise difficult clay. This storage (or "souring," as it is often called) allows of the better and more even distribution of the water in the clay, overcomes the "stickiness" which is characteristic of many clays when they come from the press, and by increasing the binding power which diminishes the tendency to adhere on simple contact, produces a much stronger tile than when no storage is allowed.

3. The addition of a more refractory clay will be desirable if the tiles stick to each other in the kiln, and the firing temperature cannot be reduced. A similar result may be obtained by using burnt fire-clay dust instead of the brick dust recommended in 1.

4. Much of the trouble of sticking tiles may be prevented by working the clay more stiffly—the stiffer the better—and, provided the proper mixture of clay and water takes place, and the necessary internal binding of the clay particles is secured, the more solid the clay issuing from the press the less likelihood is there of "sticking" difficulties.

5. In order to prevent the rupture of the upper band of clay coming from the press, small rolls may be arranged, or some species of slide provided, so as to make a support for the clay during its descent on to the lower band. Such an arrangement also prevents the lower band of clay from

being under such a pressure from the upper one, and stops much of the tendency to adhesion between the two bands.

6. Careless handling during transport of the green tiles to the dryers and kilns is responsible for many "stuck" tiles, for each time that a tile is laid suddenly or rapidly on another the tendency to adhere is increased. Just as a brickmaker secures perfect adhesion of the different pieces of clay by bringing them sharply down on each other, as with a sudden throw or fall so dropping a tile suddenly on another, or on a pile of tiles, will almost certainly cause some of the lower ones to become fastened to each other, though this may not be discovered until after the kiln has been drawn.

It not unfrequently happens that the burner is blamed for overfiring and causing tiles to fasten themselves to each other, when the real fault is with the setters, who have not handled them with sufficient care.

7. With clays which sinter easily, the man in charge of the kiln must be particularly careful, as otherwise he may cause untold damage by overfiring, especially in the hotter parts of his kiln. Many clays used for tile making will not stand a sudden rise of temperature, as the thinness of the articles renders them more sensitive to changes in temperature, and an excessive rise of temperature for a few minutes (which does no harm in a brick kiln, on account of the time it takes for the heat to penetrate through the thick bricks) would spoil a large number of tiles, even though they were made of the same clay.

The prevention of "sticking" is, therefore, to be found in a stiffer, less plastic clay, in greater care in the manufacture, particularly in the handling of the green tiles, and in the management of the kiln.—British Clay Worker.

### MILES OF TILING COMPLETED ON STATE EXPERIMENTAL FARM

Recently workmen completed 9 miles of tile drainage work on the state experimental farm north of Crookston, Minn. The work has been done under the personal supervision of Engineer Stewart of the Department of Agriculture at Washington, D. C., and is the first drainage of the kind ever attempted in that section. Several different varieties of tiling was used, cement tile from Glencoe and Hutchinson having been used, and clay tiling from Mason City and Fertile, Iowa, and Lengby, Minn., in order that all might be tested. Nine miles of tiling has been used and the entire system is considered to be a most excellent one. The results will be watched very closely and a number of wealthy farmers are already so confident of its success that they have ordered tiling which will be laid next spring. The tiling was not laid below the frost line, but it is claimed that where the fall is sufficient that the frost will not affect it in the least.

Messrs. Fell & Roberts of Trenton, New Jersey, have placed contracts with the Henry Martin Brick Machine Mfg. Co., at Lancaster, Pa., for the installation of a complete "Martin" outfit of brick making machinery, including "Martin" improved Style "A" steam power brick machine in combination with horizontal pug mill, mould sander, compound crusher, etc.

### THE BONNOT STANDARD PIANO WIRE SCREEN

One of the serious problems that all clayworkers have to contend with, especially in this season of the year when clays are wet and sticky, is the screening of the clay. This operation is especially simplified by the use of the Bonnot Standard Piano-wire screen, which are adapted to all clays. The Bonnot Company, of Canton, O., have over two hundred of their Standard screens in successful operation, having a number in each of the clay-working states.

There are many advantages to their screens. They save in the height of buildings over some screens. Their wires are stationary and have no cross-wires, but is set at an angle of about forty-five degrees, as you can see by the illustration, and the vibration of the tightly strung wires screen the clay and keeps the screen clean.

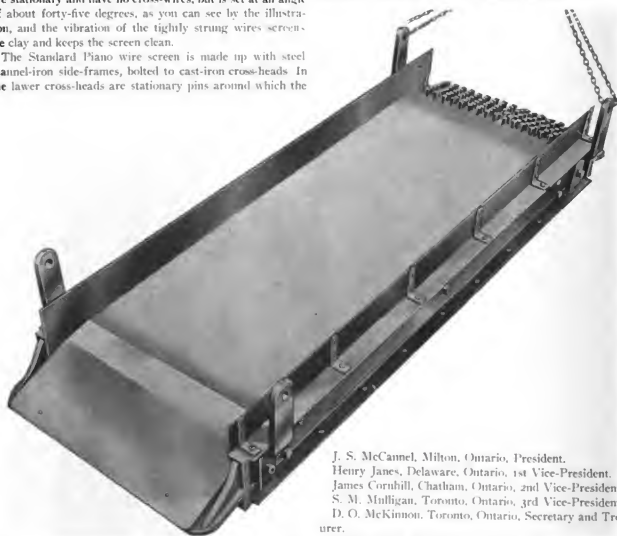
The Standard Piano wire screen is made up with steel channel-iron side-frames, bolted to cast-iron cross-heads. In the lower cross-heads are stationary pins around which the

and three feet in width, and weighs from twelve to fourteen hundred pounds.

All who have used these screens report them efficient, durable, and cheaply maintained. By writing to the Bonnot Company, Canton, O., and asking for Circular Number 12, you can get all the information required.

### 1908 OFFICERS OF THE CANADIAN CLAY PRODUCTS ASSOCIATION

The election of officers of the fifth annual meeting of the Canadian Clay Products Manufacturers, which was held at Ottawa, November 19-20-21, resulted as follows:



piano wire is looped, and on the upper cross-head turned tapered pins fit into drilled tapered holes. Accurate spacing of wires is secured by threaded rods used as bridges.

The area of the openings is double that to be found in a screen of equal size made of perforated metal pieces, and is guaranteed to successfully screen the product of one nine-foot dry pan on an average day through the regular mesh, and often will taken care of the product for two dry pans.

The size of the screen is a little over eight feet in length

J. S. McCannell, Milton, Ontario, President.

Henry Jones, Delaware, Ontario, 1st Vice-President.

James Cornhill, Chatham, Ontario, 2nd Vice-President.

S. M. Mulligan, Toronto, Ontario, 3rd Vice-President.

D. O. McKinnon, Toronto, Ontario, Secretary and Treasurer.

The executive committee are: George Close, Stratford; J. H. Elbath, Haileyburg; John B. Miller, Toronto; W. McCredie, Lyons; H. de Joannis, Chicago; S. J. Cox, Lindsay; C. H. Bechtel, Waterloo; George Crain, Beamsville; D. Martin, Thamesville; O. Baird, Parkhill; J. B. Cain, Ottawa; and M. Mills, Ormstown.

The Committee on Resolutions expressed satisfaction for the faithful services of the officers, and especially the ex-Secretary, C. H. Bechtel, whose time would not permit of his accepting the honor any longer.

## A LEADING ARCHITECT'S OPINION OF CONCRETE BLOCKS AND BRICK

The current number of the *House Beautiful* contains a splendid article by Robert C. Spencer, Jr., a prominent Chicago architect, on the subject of "What Material." It deals with cement stone, brick and terra cotta. The following paragraphs refer to cement blocks and the last paragraph to brick, showing its great favor over all other materials:

The hollow Portland cement or artificial stone block industry has grown wonderfully within a few years under the stimulus of high cost of lumber and low cost of cement. Dozens of different machines for mixing and moulding concrete are being extensively advertised, and small yards where blocks are made are appearing in every town where sand and gravel are at hand or to be cheaply had! Not only is there a wide demand for these blocks for foundation work, but many dwellings and the small buildings are being entirely built of them. It is evident that where the manufacturer of the blocks is near at hand that this material costs little if any more than wood. So hideous in appearance, however, are those imitation rock-faced stone blocks, absolutely hard and mechanical, that the writer in common with most of his professional confreres, has left the use of this material thus far to the speculative builder, and is not therefore, definitely advised as to its relative cost. The makers of block machines have been sermonized somewhat upon the immoral ugliness of their sham stone walls. Not until the artistic body of the profession demanded and employ a better form of block, will the "rock face" abominations cease to spring up. Some materials are beautiful, others are merely serviceable. Among the latter is concrete in block form, like cheap common brick it serves well as the body and bone of a wall, to be incrustured with some more seemly material like "rough cast" plaster.

To rough surfaced concrete blocks thoroughly wet, plaster with adhere solidly. The cement block house of the future if it is to be beautiful, will be in appearance a monolith, warm, light and soft in coloring. As England many of the most charming houses are of cheap bricks, rough casted, so we may hope that here, if the cement age is not fleeting—we may have many charming rough-casted houses of hollow blocks. As plain rough concrete blocks can be had cheaper than the "faced" ones, the monolithic rough cast treatment should cost little more than sham stone work of cement blocks.

In the use of stucco over wood or concrete, there are always uncertainties of workmanship and coloring to contend with, and the architect must superintend such construction with an ever-watchful eye.

In building with brick, however, the difficulty of getting good color largely disappear, the unit of construction is relatively small and easily handled by the designer and workman, and while more labor is involved in the designing and detail drawings for brick construction—the superintendence is not difficult where good bricklayers can be had. But there's the rub. Skilled bricklayers are scarce, and incompetent ones so many and so confined in their bad habits that constant vigilance in superintendence is the price which the architect must pay for work which is even acceptable, particularly if he attempts any interesting effects in bond or pattern. Nevertheless, in spite of these drawbacks, brick is the ideal material for domestic architecture—in color, texture, strength and durability. It improves with age, the soft dull reds of the commoner clays fit quietly, yet cheerfully, into the summer or winter landscapes. Their surfaces invite the upward growth of clinging vines where stone is scarce.

## DIRECT HEAT ROTARY BLAST DRYERS

The American Process Direct Heat Dryer is of the direct heat and direct contact type. It consists essentially of a cylindrical steel shell, provided on the interior with longitudinal shelves. Near each end of shell is a steel tire which rests on chilled, friction roller wheels. These wheels are rotated by gearing or chain bolting, and they in turn impart rotation to shell. The Dryer as a whole is set on a gentle slope, determined and fixed by experience.

OPERATION—The wet material and the furnace gases enter the shell at the higher end. The wet material falls to the bottom of the Dryer, is caught by a shelf, elevated to almost the highest point of the rotation, and is then showered through the furnace gases. This cycle of operations is repeated until the material, in a dried condition, is discharged from the lower end of the Dryer. The motion of the material towards the discharge is because of the slope of the Dryer and of the draft. The material and furnace gases travel in the same direction with the highest temperature in contact with the wettest material, which procedure is theoretically and practically essential to high fuel economy.



AMERICAN PROCESS DIRECT HEAT ROTARY DRYER

ERECTION—The erection of the Dryer, with its furnace, is a simple matter and can generally be intrusted to any mechanic familiar with machinery. Complete drawings and directions are always furnished and if desired, an expert will be placed in charge of the installation and early operation.

DUST, FUMES, ETC.—To overcome troubles resulting therefrom, we have designed special dust catching, condensing and scrubbing devices which effectually prevent the loss of any material, or any nuisance from discharge of odors.

GUARANTEES—Guaranteed capacity, fuel consumption, and that the material will be properly and evenly dried without injury in any way.

ADVANTAGES—1. Automatic—requiring a minimum of labor to operate. 2. Continuous in action—hence large saving in power and increase in capacity. 3. Economical in Fuel Consumption—heat being applied direct. Large evaporation obtained from the fuel consumed. 4. Simplicity of Construction—hence requiring a minimum of repairs. 5. Low First Cost.

The American Process Dryer is manufactured by the American Process Company, 62-64 Williams Street, New York. They also manufacture continuous screw presses, cookers and digestors. Write to them if interested.

## POWER PLANTS

By "CALAMITY BILL," M. E.

There is nothing in the construction of a modern brick plant that deserves so much careful consideration as the power equipment. Too often the price alone influences the brick manufacturer in purchasing his engine and boiler, and the question of economy in steam consumption is entirely overlooked. This is a mistake, as an economical steam plant will effect a larger saving, in proportion to the amount invested, than any other part of the yard.

It must be remembered that fuel consumption increases or decreases in the same proportion as steam consumption. As an instance, a simple Corliss engine, when operating non-condensing, will develop a horse power on about one-half the steam required for an ordinary throttling or plain slide valve engine. In other words, if it is costing \$5.00 per day to develop a certain horse power with a throttling engine, a simple Corliss would deliver the same power for \$2.50. This is a fair estimate, as experience has proved. On the above basis, a plant operated 200 days in the year would effect a saving of \$500.00 by the use of a Corliss engine. When we consider that \$500.00 is 10 per cent on \$5,000.00 or 5 per cent on \$10,000.00, the installation of the higher grade engine is certainly justified, even at an increased first cost.

In addition to the two types of engines spoken of above, the kind known as an "automatic" is often favorably considered. While not as economical as a Corliss it is much superior to a throttling engine in this respect, and is more substantially constructed. Of course, we might speak of compound or even triple-expansion engines, but this type is usually specified only where the horse power to be developed is much greater than that required in a brick plant.

Above all things, no matter what engine you buy, keep it clean and give it plenty of oil. Too much "monkey wrench" has ruined many a good engine. Modern engines of the types we have mentioned require very little adjusting after they have been erected properly and started. Good care and a little common sense are the main things.

Another important factor in an economical power plant is a feed water heater. By utilizing the exhaust steam from the engine and pumps, which has a temperature of 212° Fahr., at atmosphere, the feed water can be heated to 204° to 210° Fahr. This is the most important as we save about 1 per cent in fuel for every ten degrees we heat the feed water above 70°. A good open feed water heater will also remove a great many scale-forming properties in the water, such as carbonates of lime and magnesia. Sulphates require a temperature of 350° to affect precipitation and water containing this substance is usually chemically treated. A good heater adds very materially to the life and efficiency of the boiler. Clean out your heater often and do not allow it to become choked. Remember if the heater did not remove the impurities in the water, they would go to the boiler, which is more difficult to clean. A frequent renewal of whatever material you are using for filtering in your heater is also advisable.

Regarding boilers, the writer is of the opinion that a return tubular boiler with triple-riveted butt strap joints is

the best for brick yard practice. The insurance companies do not hesitate to allow 125 to 150 pounds working pressure on this type of boiler, which, as a rule, is a greater pressure than the engine should be operated under. Heavy duty engines of the better class are, however, always guaranteed for higher pressures. A water-tube boiler is sometimes desirable on account of lack of space in large yards, but this is not often the case. I can only say again in connection with the boiler plant what I have already said regarding the engine and heater. *Keep it clean.* Blow out your flues frequently and do not allow scale to form. Absence of scale and clean flues will make a big difference in your coal pile.

A little more attention to your power plant and a knowledge of the conditions under which it is running, will soon account for many leaks in your profits, not now understood. You may save a few dollars by installing patented attachments for your kilns or drier, but a modern, up-to-date steam plant, efficient and economical, will give far greater returns on the investment than any other part of your plant.

#### INVENTOR SAYS PAINT CAN BE MANUFACTURED FROM BRICK, TERRA COTTA AND TILE WASTE

A man in Lakewood, N. J., by the name of A. E. Williams, claims to have invented a process to utilize waste clay products such as brick, terra cotta and tile waste to manufacture a mineral paint for which he has obtained a United States patent. He has also filed application for foreign countries.

He claims by his invention to be able to manufacture mineral paint and use the best of linseed oil at one-half the price of the cheapest paint that is now being sold all over the world, and still be able to make more profit on his paint than any other manufacturer.

There are, according to latest reports, 6,033 operating firms in the United States manufacturing brick, etc., and these firms are doing a business of over \$140,000,000 a year, with an increase at the rate of \$10,000,000 a year in clay products.

Inventor Williams says all the waste from these factories can be utilized. "There is," he says, "no known substance that will hold its color for hundreds of years as brick will. This in itself proves the fastness of this paint made from brick.

"The manufacturers of other red and brown mineral paints have to get their material from the distant mines where the iron ore is first mined, ground, treated and roasted, and this, in most part, my invention does away with."

The inventor claims to be able to make the waste clay products such as brick, etc., that are thrown aside by the manufacturers pay more profit than the brick itself. The cost of this waste, he says, is only in the handling of it. With his process, the inventor claims, one brick weighing four pounds will make 12 pounds of mineral paint, or 1,000 brick, weighing 4,000 pounds, or two tons, will make 12 tons of paint, using the best linseed oil. The paint, he says, is just as good as any mineral paint in the world.

# PROGRAM OF THE CLAY WORKERS' INSTITUTE

The clay workers' institute is to be held at the department of ceramics, University of Illinois, January 6 to 10th, at Urbana, Illinois, Prof. C. W. Rulfe, director, this being two weeks ahead of the Illinois Clayworker's Association meeting which will be held at Peoria, Ill., January 14, 15, and 16th.

It is the first duty of the Department of Ceramics of the University of Illinois, to serve the clay interests of the state.

This it is endeavoring to do in two ways:

By training young men for service in the industry.

By investigating problems which will help manufacturers to improve the quality and reduce the cost of their wares.

As many of the clayworkers are so situated that they cannot avail themselves of the regular courses offered by the University, the members of the Department have thought best to extend to them every possible opportunity for technical instruction.

It is for this purpose that the Institute for Clayworkers has been inaugurated, and it is for the clayworkers themselves to decide whether the movement is a step in the right direction and should be expanded.

Every one engaged in the technical side of clay working is earnestly invited to attend these sessions, whether he be a manager, superintendent, foreman, or burner. The work is to consist in part of lectures, in part of laboratory instruction dealing with the testing of clays by means of simple yet accurate methods and the use of apparatus employed in measuring temperatures and controlling the burning. In all this work we shall endeavor to make clear the principles underlying clay working operations.

Each evening an informal meeting for the discussion of particular problems proposed by those attending the Institute will be held.

It is the intention of the University authorities in general, as well as of the instructional force of the Ceramic Department, to make the stay of the visitors a pleasant one in every respect.

Those who expect to attend the session are requested to notify the director of the department. No charges whatever are made. Board and rooms may be obtained near the University at reasonable rates.

## PROGRAM.

Monday, January 6th:

9:00 to 10:00 a. m. The Preparation of Clays, Professor A. V. Bleining.

10:00 to 11:00 a. m. Clay Working Machinery, Mr. R. T. Stull.

11:00 to 12:00 a. m. Die Construction, Mr. R. T. Stull.

1:00 to 4:00 p. m. Laboratory demonstration of clay-testing methods.

7:30 to 8:30 p. m. Informal discussion of clay working questions.

Tuesday, January 7th:

9:00 to 11:00 a. m. The Manufacture of Augur Machine Front Brick Without Repressing, Mr. R. T. Stull.

1:00 to 4:00 p. m. Laboratory demonstration of clay testing methods.

7:30 to 8:30 p. m. Informal discussion.

Wednesday, January 8th:

8:00 to 9:30. The Drying of Clay Ware, Professor A. V. Bleining.

10:00 to 11:30 a. m. The Vitrification of Clays, Professor A. V. Bleining.

1:00 to 4:00 p. m. Laboratory demonstration in making burning tests.

7:30 to 8:30 p. m. Informal discussion.

Thursday, January 9th:

8:00 to 10:00 a. m. The Manufacture of White Ware, Mr. Herford Hope.

10:00 to 11:30 a. m. Controlling Temperature and Draft of Kilns, Professor A. V. Bleining.

1:00 to 4:00 p. m. Laboratory demonstration in heat and draft measurement.

7:30 to 8:00 p. m. Informal discussion.

1. Mr. R. T. Stull, Instructor in Ceramics, is a graduate of Ohio State University, and has had extensive practical experience along the lines of architectural terra cotta, enamelled brick and chemical stone-ware manufacture.

2. Mr. Herford Hope, Assistant in Ceramics, has for years been connected with the Mayer Pottery Co., Beaver Falls, Pa., and is thoroughly familiar with all details of white ware manufacture.

## PIONEER IN THE FIRE CLAY INDUSTRY DEAD

John M. Freeman, one of the pioneers in the fire clay industry of the Ohio Valley, and a resident of Toronto, O., entered into rest at his home in Toronto, Nov. 17, 1907, at the advanced age of 83 years. He had been in delicate health for the past year and three weeks ago had an attack of vertigo from which he was subject, rallied, but was again stricken, and remained unconscious until he slept away, death coming peacefully.

Mr. Freeman was the son of the late Thomas Freeman, of Freeman's Landing, W. Va. He was born in 1824 in Pittsburg and came to Freeman's Landing, W. Va., where his parents located in 1832, his father being a pioneer of the Fire Brick Industry in the Ohio Valley. Upon reaching manhood Mr. Freeman engaged in steamboating. In 1867 he came to Toronto and entered into the sewer pipe business at Freeman's Landing, with his brothers Charles A. and S. D. Freeman, and remained in this business until his retirement in 1902. Since that time he has lived in the seclusion of his home.

He moved from Toronto to Steubenville in 1876 and lived on South Third street until six weeks ago he sold his home and moved to Toronto. He married Miss Cyrene Jex, of Kentucky, a gentlewoman and grand niece of Alexander Hamilton. They lived in happy companionship until 1902, when Mrs. Freeman passed away. Of this union two daughters survive. Mrs. Lucile F. Rodgers at the home in Toronto and Miss Cyrene Freeman of Steubenville, and one grandson, Mark Rodgers. Mr. Freeman was one of a family of fourteen children and was the twelfth to enter into rest leaving two surviving sisters, Mrs. Mary Truesdale, of Chicago, and Miss Jennie Freeman, of Toronto. Mr. Freeman was a courteous gentleman of the old school, refined and gentle in manner, genial in disposition and intellectual in his attainments, being a great reader and keeping in touch with the current events of the day. He was a business man of more than ordinary ability, of strict integrity, and in whom advice was frequently sought by younger men.



## CLAY RECORD.

### THE ATLAS ELECTRIC DRIVEN CLAY CAR

The rapid development of electricity as a motive power in the past decade has brought its use into every class of labor-saving devices. The Clay Working Industries have been slow in taking hold, but at the present time some large plants are operated entirely by such means. As a flexible and economical motive power there is no power as easily and readily adapted as electricity. Through the introduction of labor-saving tools and being manufactured in large quantities, the cost of electric motors is brought within the reach of all. Especially so is this true in the street car type of motors (and of many electrically-driven devices in clay-working establishments), may be mentioned brick-making machinery, pug mills, represses, exhaust fans, transfer cars, winding drums, clay and brick cars.

trolleys being used. The cost of operating one of these electrical cars compared with steam locomotives is far less; in fact, some firms are considering putting them in for short haulage where horses are now being used as it can be operated in all kinds of weather. Very few plants today the without electrical equipment for lighting purposes, or otherwise. During the day time the generator could be used to advantage for operating these motor cars. Any ordinary handy man or boy of the average intelligence can run them; the cost of maintenance is very low, all parts are covered and accessible, being dust proof, cut steel gears with bronze bushings and other wearing parts of equal quality are used. The cost of hauling clay for 100,000 brick yard one-half a mile with six two-yard cars and one motor car is approximately 5 to 6 cents per 1,000 brick. Of course, this varies depending upon the location and circumstances.



THE ATLAS ELECTRIC DRIVEN CLAY CAR

We take pleasure in presenting a type of car which is not new by any means, particularly in handling clay, shale, etc. It has demonstrated its satisfaction to a number of concerns as an economical, quick and serviceable car. As will be noticed, the car sets very low and can be used either as a hand or steam shovel car. They are made in any capacity from two yards to six yards and a train of trail cars can be taken care of, one or more if desired. The operator has all the operating levers and attachments within easy reach; he can dump motor car, also the next trailer and take care of his trolley, brake and controller. The motor car is equipped with a cab if desired as a protection from the elements.

In some instances this car is furnished with a device so as to readily go up the inclines directly over store bins instead of being hauled by haulage drums. The cost of equipping an electrical road is very small in comparison with the saving as it is not necessary to bond rails, two

This motor driven idea can also be applied to other types of cars, depending on the material to be handled; such as rectangular bottom dump and gable bottom cars, also guage can be varied from 18 in. to 4 ft. 8½ in. This type of car can be brought into use in many ways, such as handling common brick, pulling transfers long distances, or handling dummy cars from kiln to docks and sidings.

The Atlas Car & Manufacturing Co., Cleveland, O., are exclusive manufacturers and make a large line of electric cars as well as clay and dryer cars of all descriptions. Their new catalogue shows a number of up-to-date cars of all types. Among their customers are numbered some of the largest clay-working institutions in the country.

The Michigan Enamelled Brick & Tile Co., Alpena, Mich., has been organized to manufacture clay products from clay found on the property of J. C. Walker and W. T. Jones.

## CLAY-WORKING INDUSTRY

The products of the clay-working industries of the United States in 1906 were valued at \$161,032,722, as against \$149,607,188 in 1905, a gain of \$11,335,534, or 7.57 per cent. The brick and tile products, the materials that enter most largely into structural and engineering arts, were valued at \$129,591,838, making 80.48 per cent. of the total; the value of the pottery, or finer grades of goods, was \$31,440,884, or 19.52 per cent. of the total. In 1905 these percentages were 81.35 and 18.65 respectively, and practically the same relative proportions have been maintained by the two great branches of the industry for several years.

Every State and Territory of the Union contributes to the general wealth of the nation by the production of clay goods, although in Rhode Island and Nevada the number of producers was so small that publication of State totals would disclose the confidential information furnished by individual statements. The value of the products in 1906 is shown in the following table:

Value of clay products in 1906, by States and Territories.

State or Territory.	Brick and tile.	Pottery.	Total.
Alabama .....	\$1,650,993	\$37,996	\$1,688,989
Arizona .....	93,694		93,694
Arkansas .....	512,694	19,500	532,194
California .....	4,265,633	98,597	4,364,230
Colorado .....	1,784,005	47,083	1,831,088
Connecticut and Rhode Island..	1,613,761	a 133,444	1,747,205
Delaware .....	237,768		237,768
District of Columbia .....	335,139	(b)	335,139
Florida .....	289,644		289,644
Georgia .....	2,380,367	20,257	2,400,624
Idaho and Nevada .....	282,889		282,889
Illinois .....	11,651,278	982,903	12,634,181
Indiana .....	6,224,541	933,693	7,158,234
Ind. Territory ..	299,790		299,790
Iowa .....	3,411,027	58,000	3,469,027
Kansas .....	2,432,371	(b)	2,432,371
Kentucky .....	2,425,214	167,209	2,592,423
Louisiana .....	894,277	6,420	900,697
Maine .....	680,370	(b)	680,370
Maryland .....	1,763,040	373,499	2,136,539
Massachusetts ..	1,895,199	277,534	2,172,733
Michigan .....	1,793,367	51,110	1,844,477
Minnesota .....	1,603,279	(b)	1,603,279
Mississippi .....	831,769	19,311	851,080
Missouri .....	6,626,775	69,500	6,696,275
Montana .....	297,299	(b)	297,299
Nebraska .....	990,708		990,708
N. Hampshire ..	726,051	(b)	726,051
New Jersey .....	10,079,611	7,282,658	17,362,269
New Mexico .....	152,599		152,599
New York .....	12,008,260	1,868,347	13,876,607
N. Carolina .....	1,170,568	11,770	1,182,338
North Dakota ..	269,873		269,873
Ohio .....	17,023,806	13,990,359	31,014,165

Oklahoma .....	241,111		241,111
Oregon .....	506,192	(b)	506,192
Pennsylvania ...	19,363,794	2,410,817	21,774,611
S. Carolina .....	805,212	25,269	830,481
South Dakota ..	58,175		58,175
Tennessee .....	1,405,458	214,768	1,620,226
Texas .....	1,860,993	108,635	1,969,598
Utah .....	632,344	2,100	634,444
Vermont .....	112,368		112,368
Virginia .....	1,966,078	(b)	1,966,078
Washington ....	1,458,324	41,560	1,499,884
West Virginia ...	1,194,757	1,588,555	2,783,312
Wisconsin .....	1,215,172	12,170	1,227,342
Wyoming .....	74,321		74,321
Other States ...		587,820	587,820
Total .....	\$129,591,838	\$31,440,884	\$161,032,722
Per cent, total..	80.48	19.52	100.00

a Produced by Connecticut alone.

b Included in other States.

Statistics of the clay-working industries, prepared by Jefferson Middleton, are presented by the United States Geological Survey in an advance chapter from "Mineral Resources of the United States, Calendar Year, 1906," now ready for distribution.

## RECEIVER FOR ZANESVILLE TILE COMPANY

The affairs of the Zanesville (Ohio) Tile Co., manufacturers of all kinds of flooring tile, and successor to the old J. B. Owens Pottery Co., Owens addition, Brighton, has been thrown into the hands of a receiver on application of H. L. Moor, secretary and manager and a stockholder of the company. Attorney L. E. Dodd was appointed receiver by the court and he at once took charge of the company's business.

According to the petition, filed in common pleas court by Mr. Moor, the liabilities of the company aggregate \$77,000. The assets will reach \$286,000, part of which, is not immediately available. Certain internal conditions in the company's business were mainly responsible for the action in court.

"The company is wholly solvent," said Receiver L. E. Dodd. "The company's general business is good; it has a quantity of manufactured goods, a large number of orders on hand, aggregating close onto \$10,000, and plenty of raw material."

The plant has not been closed down. Instead, application was made by the receiver for permission to continue the operation of the plant in the interest of the creditors, thereby preventing the heavy loss in different ways which would follow the closing down of the big plant.

Of the \$77,000 liabilities, \$36,000 is due, according to the petition. The petitioner says that he is personal security on two notes, held by the Irving National Bank of New York and amounting to \$17,000.

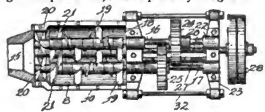
The officers of the Zanesville Tile Co. are: J. B. Owens, president; F. G. Dodd, vice-president; H. L. Moor, secretary, and J. M. McCracken, treasurer. The company has been operating the plant of the old pottery company and has been manufacturing all kinds of flooring, mantel and wainscoting tile.

# NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

868,355. Brick-Machine. Friedrich Mueller, St. Louis Mo. Filed Jan. 22, 1906. Serial No. 297,330.

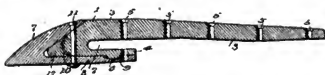
A brick machine comprising a casing, a die at the forward end of the casing, a pair of shafts extending into the casing, a double conveyer located on the end of each shaft and contacting with the die to press the plastic clay into and through the die, a second single conveyer located upon each shaft at the rear of the forward conveyer to assist in the feeding of the plastic clay, and a plurality of agitators located



upon the shaft to the rear of the last mentioned conveyer for agitating the clay, a gear wheel located upon each of said shafts, a drive shaft, a counter-shaft, a pair of gear pinions located upon the drive shaft, and a gear pinion located upon the counter-shaft, said gear pinions meshing with and operating the gear wheels to revolve the conveyers and agitators in opposite direction, substantially as specified.

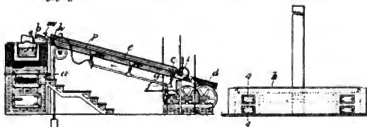
868,066. Tooth for Excavating-Dippers. Harry J. Barnhart, Marion, Ohio, assignor to The Marion Steam Shovel Company, Marion, Ohio, a Corporation of Ohio. Filed Mar. 19, 1907. Serial No. 363,262.

A tooth of the character described comprising a body portion having a projection on one side thereof, and a cutting point adapted to be secured to said body portion and having a recess adapted to receive said projection.



A tooth of the character described comprising a body portion having a projection on one side thereof and having its forward end reduced, a cutting point having a recess adapted to receive the forward end of said body portion and provided with projections extending on either side of said reduced portion, and having a second recess adapted to receive the projection on said body portion.

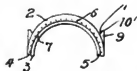
868,418. Method of Making Composite Pipe. Thomas E. Dwyer, Wakefield, Mass. Filed June 16, 1905. Serial No. 265,513.



The method of making composite non-corrodible pipe a primary tube of relatively-refractory corrodible material which consists in uniting a non-corrodible metallic lining to by coating and heating the primary tube in a bath of molten

material, placing the primary tube over a mandrel, pouring molten non-corrodible metal having a lower melting point than that of the metal from which the primary tube is made into the space between the mandrel and tube while the primary tube is still hot, and cooling the tube.

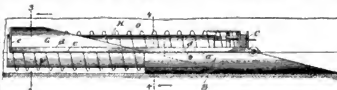
867,045. Drain-Tile. William H. Carson, Madison, Minn. Filed Feb. 18, 1907. Serial No. 357,841.



A composition tile comprising two longitudinally divided sections of equal size, each section having a longitudinally arranged tongue and an adjoining flat surface on one edge, and a longitudinally arranged recess and a flat surface on the other edge, said tongue and recess being oppositely arranged on the sections of each tile, whereby the edges of the tile will interlock when placed together, substantially as described.

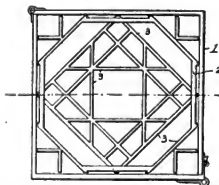
868,007. Means for Molding Pipes. Ernest L. Ransome, New York, N. Y. Filed June 13, 1906. Serial No. 321,569. Renewed Apr. 26, 1907. Serial No. 370,375.

An apparatus for forming concrete pipes in trenches, having a cap or top mold section and means for supporting the same against the wall or walls of the trench at one or both



sides of the mold section, to permit said mold section to slide on said supporting means horizontally through the trench, as the construction of the pipe advances, whereby an unobstructed space is left under the mold section facilitating the formation of the pipe and a means adapted to precede the mold section and serving to introduce a reinforcing member into the pipe as the same is formed in the said unobstructed space beneath the mold section.

868,261. Process of Making Tiles. Constantinos H. Geanakopulos, Reading, Pa. Filed May 4, 1907. Serial No. 371,893.

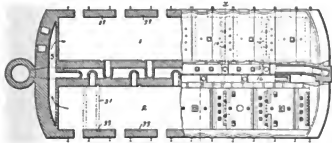


The process of making tile sections of varied colors, consisting of placing a removable form comprising a series of joined partitions in a mold, partially filling the spaces between said partitions with a mixture of high grade colored cement and sand, removing the form from the mold filling the mold with a mixture of sand and cement of inferior quality, subjecting the whole to severe pressure, applying to the face of said section a coating of specially prepared dressing composed of beeswax, linseed oil and alcohol and drying by air.

868,059. Tunnel-Kiln. Peter L. Youngren, Milwaukee, Wis. Filed July 18, 1905. Serial No. 270,247.

In a kiln a temporary partition wall, composed of green brick arranged in solid courses with an angular pitch in opposite directions on opposite sides of a center line.

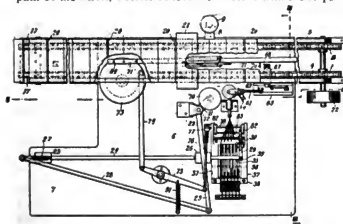
In a kiln a temporary partition wall composed of green bricks arranged with an angular pitch longitudinally of the wall; in combination with a top wall having a series of gas inlet flues adapted to deliver combustible gas into the air adjacent to the temporary partition wall, and means for inducing a draft past said flues and over the wall, together



with a set of auxiliary inlet flues leading downwardly and along the side walls of the kilns to inlet apertures at the sides thereof; together with a second temporary partition wall extending downwardly from the top portion of the kiln in the rear of the first mentioned partition wall, to points near the bottom thereof and supported upon bricks having passages for the air and gases of combustion deflected downwardly by such wall.

868,793. Tile-Gaging Machine. Max A. Metzner, Perth Amboy, N. J., assignor of one-half to The C. Pardee Works, Perth Amboy, N. J., a Corporation of New Jersey. Filed Jan. 29, 1906. Serial No. 298,319.

In a machine for measuring tiles, the combination of gaging means for the tiles a longitudinally adjustable printing wheel, a plurality of stops adapted to be projected into the path of the wheel, a series of levers connected with the stops

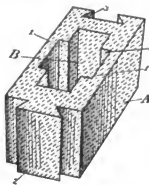


to project the same, said levers being arranged parallel with each other on a common fulcrum, a tappet adjustable under control of the gaging means transversely across one end of the said series of levers, and means for actuating the tappet to actuate a selected lever, as set forth.

868,838. Concrete Building-Block. Henry S. Brewington, Baltimore, Md. Filed Dec. 28, 1906. Serial No. 349,797.

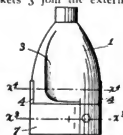
The combination of a hollow concrete building block, comprising a Maltese cross-arm shaped extension on one end thereof and a similar shaped groove in the opposite end, of transverse cross bars on the bottom side of the said block near each respective end portion, and adapted to fit into the hollow portions of two adjacent blocks when placed on top

thereof, thereby relieving the strain on the locking device on the ends of the two said under blocks, substantially as described.



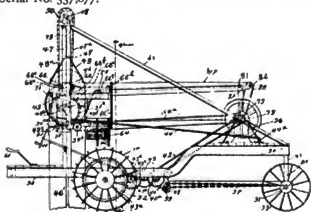
868,866. Plunger for Tile-Machines. George F. Keil, Sherburn, Minn. assignor of one-half to Christian F. Mickelson, Sherburn, Minn. Filed Apr. 29, 1907. Serial No. 370,950.

The combination with a hollow plunger head 1 having the pockets 3, of the detachable hard metal wearing plates 4 set into said plunger or head at points where the lower portions of said pockets 3 join the external surface of said



plunger or head, and at which points the greatest wear takes place, the hard metal follower ring 7 detachably and adjustably applied around the lower end portion of said plunger or head 1, said ring being cut at 8, and nutted bolts, adjustably securing said follower ring to said plunger, substantially as described.

868,937. Tile-Ditching Machine. Micajah L. Poulter, and Marion J. Munson, Stockport, Iowa. Filed Oct. 8, 1906. Serial No. 337,877.



In a ditching machine, the combination with a framework, a carrier supported upon said framework, of a scoop secured to said carrier, said scoop provided with a slot formed in its side and extending its entire length and said slot open at both ends, and means carried by said framework and adapted to be positioned within the slot of said scoop for cleaning the inside thereof, and means for driving said carrier.

## CLAY RECORD.

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Vol. XXXI. NOVEMBER 30, 1907. No. 10

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wansmaker.

## CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick and Tile Association will be held at Des Moines, Iowa, January 22 and 23, 1908.

The eighth annual convention of the Wisconsin Clay Workers' Association will be held at Milwaukee, February 12, 13 and 14th, 1908. Headquarters at the Hotel Blatz.

The fourth annual convention of the National Association of Manufacturers of Sand-Lime Products will be held at Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic Society will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Southern Hotel.

The twenty-second annual convention of the National Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d to 8th 1908. Headquarters at the Southern Hotel.

The thirtieth annual convention of the Illinois Clay Workers' Association will be held at Peoria, Ills., Jan. 14-15 and 16th 1908. Headquarters at the National Hotel.

Human nature with a safety brake attachment is an excellent thing.

No matter how much a man dislikes a creditor he is apt to ask him to call again.

If a man shoots putty balls at an enemy he need not be surprised if they come back as cobble stones later.

A man may think he is having a good time when he is killing time, but sooner or later time will get even by killing him.

Subscribe for the CLAY RECORD today. You can have it until 1909 for One Dollar, twenty-six issues. The only clay journal in America that is printed twice a month.

These are times when one should watch their advertising and if possible increase it in every direction that they can. He that keeps at it will find the worms like the early bird.

The entire brick product of the state of Illinois last year was valued only half as much as the product of a big Pennsylvania brewing concern. This is not surprising when we reflect that few if any people drink brick.

## A NEW RATE ON BRICK AFTER DECEMBER

Shippers of brick in the Columbus, O., district, have been notified that the Central Freight Association has made a rate on all classes of brick from Chicago to New York of 22½ cents, effective Jan. 1. The new rate has been made by reason of the complaints of shippers since the single classification of brick has been established. Just what effect the putting into effect of the new rate will have on cases now pending before the interstate commerce commission is not known, but it is believed that shippers will consider the rate as still too high.

## NEW YORK BRICK MARKET TAKES A DECIDED SLUMP

Brick manufacturers consider their trade in an unpleasant position. Demand has fallen off about half, arrivals are few and there is a surplus in the market. The price for good brick is nominally \$6 per thousand, but in order to get rid of waiting cargoes, that price is being shaded.

"I think the condition of our trade is worse than it was in 1893," said President Hammond, of the Hudson River Brick Manufacturers' Association. "The adverse conditions seem more acute to us, at any rate, because when the panic of 1893 set in brick was being made on a low cost basis, and had been for a long period, so that the depression did not carry the severe effects of the present state of financial affairs, when manufacturing costs have been raised to a high level."

## OBITUARY

Harry Walker, a well-known Trenton, N. J. potter, died of heart trouble while en route to a hospital for treatment.

John M. Freeman, pioneer in the fire-clay industry of the Ohio Valley and a resident of Toronto, Ohio, for many years, died at his home, aged eighty-three years.

H. B. Camp, one of the foremost clay manufacturers in America and a capitalist, died at Akron, Ohio, of heart trouble. He made a fortune in sewerpipe and other clay products manufacture.

R. A. Brown, the largest brick manufacturer and one of the wealthiest men in North Carolina, died at his home in Concord, after a long illness. He was sixty years of age. A widow and four children survive.

Samuel C. Walker, president of the Harbison-Walker Refractories Co., Pittsburgh, Pa., one of the largest brick manufacturing concerns in this country, died at his home at Shields, a suburb of Pittsburgh. He was fifty-nine years of age and a widower. He was a director of many banks and other institutions.

John H. Henderson, of Dover, N. H., engaged in the brick manufacturing business at Dover Point for the past twenty-two years, died at his home, 163 Central Avenue. He leaves a widow and one son. He was a partner of Charles H. Morang.

## FIRE! FIRE! FIRE!

Fire did considerable damage at Edward Schusler's brick works, 276 Weiss St., Buffalo, N. Y., destroying the buildings at the kilns and doing other damage.

The Fultonham Brick Co. suffered a small loss by fire at its plant in Axline, Ohio. The oil house and contents were fully destroyed.

The Carlton West Potteries, Toronto Junction, Ontario, were destroyed by fire causing a loss of \$5,500; only \$1,500 insurance.

The brick works owned by George E. Anders & Bro., 1745 Westwood Ave., Cincinnati, Ohio, was badly damaged by fire.

The Bippus Tile Co., Bippus, Ind., was completely destroyed by fire causing a loss of \$20,000. The officers are: J. W. McCollin, president; W. McKnight, treasurer and M. G. Wright, secretary. The plant was thoroughly up-to-date and will probably be rebuilt.

## WILL LOSE HIS POLITICAL JOB

L. B. Cooke, state examiner into municipal affairs, has virtually ousted Councilman O. H. O'Dell from office by his recent report of municipal affairs, at Lima, Ohio. Mr. Cooke has learned that Councilman O'Dell is a member and director of the Superior Brick Company, from which the city has purchased brick. Mr. Cooke has cited section 45, of the municipal code and asks the removal of Mr. O'Dell at once. The code section cited is explicit and leave but two avenues open for O'Dell, who has been a big factor in municipal affairs, one being to resign at once, and the other to await the request for his resignation by Mayor Robb, who will send a communication to the council next Monday. Under the statutes the councilman is disqualified from retaining his office.

## ACCIDENTS, DAMAGES AND LOSSES

Creditors ask for a receiver for the Ritz Brick Co., Sergeant Bluff, Ia. The liabilities are about \$10,000.

Harry Preston, superintendent of the Seward (Pa.) Brick Co., sustained a painful injury while helping some of his men at the plant.

The Enterprise Brick Co., Duluth, Minn., had a verdict of \$664 given against them for machinery. Judgment was rendered for that amount.

The Kingsland (N. J.) Brick Co., 52 Nassau St., New York, in their schedule in bankruptcy show liabilities of \$101,008, and assets \$5,840.

Emory Graham, superintendent of the Tempest Brick Co., at Manown, near Pittsburg, Pa., was probably fatally injured by being caught in a belt which he was adjusting.

L. W. Servey has filed a claim of damages for \$15,000 against the Sandstone Brick Co., Schenectady, N. Y., for the death of his son who was killed by an explosion of a cylinder.

The Zanesville (O.) Tile Co., successor to the J. B. Owens Pottery Co., is in the hands of a receiver. The liabilities of the company are only \$77,000, while the assets are \$286,000.

Andrew Peterman, of Fredericksburg, O., and E. R. Hammond, of Pittsburg, have been appointed receivers of the Fredericksburg (O.) Brick, Coal & Clay Co. The plant was completed three years ago but has never operated owing to disputes between the promoters.

An order has been issued to show cause why the Aberdeen (So. Dak.) Brick Co. should not have a receiver appointed. The company is capitalized at \$25,000, one-half if which is held by L. Lager and wife, balance by citizens of the town.

The Peerless Brick Machine Co., of Minneapolis, Minn., has been granted an injunction restraining the Miracle Pressed Brick Co. from further infringing upon a patent concrete brick-making machine, also to determine the amount of the damages.

## THREE UNIONS IN CONFLICT OVER THE SIZE OF A BRICK

The Bricklayers' union, not satisfied with the description commonly given a molded block of clay, either sun-dried or burned, known as a brick, has undertaken to make a more explicit definition. For that purpose the bricklayers, tile setters, and stone masons yesterday commenced a conference in the headquarters of the Associated Building Trades.

An American brick, size 2x4x8 and weighing four pounds, passed as being the kind over which no dispute could arise. The Roman brick, size 1½x2x4x10 and weighing about four pounds, is in doubt. The tile setters want it in their branch of the business and the bricklayers insist that it is a part of their trade to set the Roman brick.

The large vitrified brick, size 4x4x8 and weighing over ten pounds, are claimed by the stone masons as being in their class of material, and therefore to be placed in the walls by the stone masons only.

## CLAY RECORD.

### THE BICKFORD BRICK CO. BUYS FIRE-BRICK PLANT

At a trustees' sale in bankruptcy held in the arbitration room in the court house at Clearfield, Pa., the Bickford Fire Brick Company, of Lock Haven, Pa., came into possession of all the property of the Curwensville Fire Brick company at Curwensville, Pa.

This purchase includes a large and completely equipped Fire Brick plant with all necessary buildings, machinery, boilers, engines, twenty-three kilns, stock shed, tramway, tools and fixtures necessary for the operation of the plant. It also includes several hundred acres of coal and clay lands as well as the right, title and interest of the Curwensville Fire Brick company in articles of agreement and leases held on coal, clay and mining rights on many hundreds more acres in close proximity to this plant, as also a large tract of land in Union County.

The purchase also includes a quarter of a million of building brick and a million furnace brick now in the storage sheds.

In addition to their purchase the Bickford Fire Brick company are the owners of several thousand acres of coal and fire clay lands which they had purchased a year or more ago when they contemplated erecting a new works at or near DuBois, which said lands are several miles nearer the Curwensville works than they would have been to DuBois. The purchase price of the Curwensville plant and belongings was \$175,000.

It is the intention of the Bickford company to make some additions, changes and improvements as soon as the sale is confirmed, but pending these improvements the works will be started which now has a capacity of 50,000 brick per day.

James A. Bickford, president and general manager of the Bickford Fire Brick company, stated that they could have the title of the purchased property conveyed in about ten days and by the middle of December the plant could be gotten in shape to start up.

When the improvements contemplated are made, this will be the finest, best equipped and backed up by the greatest body of raw material of any fire brick plant in Pennsylvania.

### READSBORO MAN MAKES ALUMINUM FROM CLAY

An interesting project for developing aluminum from clay at Montague City, Mass., is reported at Montague City, where W. C. Davis of Readsboro, has secured options on the Burnham Brothers' brick yard, with land of 50 acres, and also on a place of 12 acres belonging to C. P. Wise.

Mr. Davis states that he has a secret process, which he has patented, for making a much harder type of aluminum than has heretofore been made, and that after trying the clay of about 200 yards, he has concluded that that at Montague City is best. He says this process came to him accidentally, and that only his wife and he know it. The price rumored to have been paid for the Burnham Brothers' brick yard is \$35,000. He has been experimenting at Readsboro, and as is announced will soon begin work here. It is not known what the plans are for conducting the brick yard, which it is expected will run along as it has. Mr. Davis has had mining interest about here for a number of years.

### JUDGE REFUSES TO APPOINT A RECEIVER

Judge Vinson Carter, Superior Court, Indianapolis, Ind., refused to appoint a receiver for the Indianapolis Composite Brick Company, on petition of Henry W. Culbertson, former factory superintendent for the concern. Mr. Culbertson alleged that he had taken twenty-one shares, of the par value of \$50, of the stock of the company, with the understanding that, if he should be dismissed as superintendent, the value of his stock should be returned to him. The financial situation caused the company to close, temporarily, a short time ago. Culbertson then asked the officers of the company to return his stock subscription money, and to pay him his back salary. The salary was paid, but the stock money was not paid. Culbertson then brought suit for a receiver for the company, alleging that it was in danger of becoming insolvent. In court the officers of the company showed its affairs to be on a sound basis, and said work would be resumed as soon as financial conditions warranted such resumption. On this showing, Judge Carter refused to grant the petition for a receiver.

### BRITISH ARMY OFFICER NOW SHOVELS CLAY

Relinquishing his position as the pampered and toasted pet of English society for a position as day laborer, Capt. Glen Collins, casting aside his regimentals, worn with honor in the British Soudan and in the Boer war, has donned overalls and jumper, and is at present engaged in shoveling coarse clay at the Grueby Faience Pottery Company Works in South Boston, Mass.

"It is a very good plan and by the way Capt. Collins has taken hold, he has every assurance of success."

This was the statement of W. I. Whitmore, superintendent of the Grueby Faience Pottery Company when asked what he thought of the former society pet and British army officer.

Capt. Collins has started to work from "the bottom up" in the pottery concern. His duties for the present consist of shoveling clay and handling the huge molds which 'ater are baked and turned out as tiles for building fronts or in stanch blocks for the structure of fire-proof sky-scrapers.

Treasurer William Graves of the concern when asked his opinion said that it was nothing uncommon at all, and that all college graduates along engineering lines, if they wish to make a success, must enter the trenches and do the practical work.

"It is the only way in which a person can learn this business," said he.

The somewhat unusual move on the part of the divorced husband of attractive Nathalie Schenck, of Newport and New York, was not made without due consideration. It was finally arranged, upon the advice of an old friend of his family, and with the full consent of his father, Capt. A. Glen Collins, of the famous "Black Watch" regiment of Scotch fame, that he should learn the pottery business. His father has assured him that if he sticks to the business for a year and shows an aptitude for it, he will invest money with the firm, that his son may share in the company's profits.

## THEY WANT A BUSINESS MOTTO

St. Louis, Mo., November 27, 1907.

Mr. George Hartwell, Plymouth Building, Chicago, Ill.

Dear friend Hartwell: In working out our organization we seem to have overlooked a rather important factor of our business, and that is, a business motto, and in talking over the matter with our officers, we thought it best to give the brick manufacturer and engineer an opportunity to make suggestions.

We therefore wish to offer a prize of \$20 to the one who will furnish us the best motto, to be applied to an engineering company such as ours. The length of the motto must not be over twenty-five words, and we would prefer some standard quotation from a recognized author.

We will ask you to publish this letter, so that parties will write us direct. Any suggestions will be considered up to January 1st. An announcement will be made in the Convention number, giving the name of the winner.

With kindest wishes, we are,

Yours very truly,

LUCE ENGINEERING CO.

Peter B. Gibson, Secretary and Treasurer.

## PROMOTOR FLOWER HELD ON NEW CHARGE

Another warrant was issued the 27th, for Dr. R. C. Flower, the promoter, who jumped \$23,000 bail rather than face swindling charges in New York and subsequently formed the Virginia Clay and Material Company to float stock in his "secret Persian process" for making brick.

It was served on Flower immediately after he had waived a hearing before Alderman Koch, in Reading, Pa., and had been remanded to jail in default of \$3,000 bail on charges preferred several weeks ago by Dr. Charles B. Dotterer, of Boyertown, president of the "secret process" company.

Harry R. Leimbach, who made the additional charge, is one of a number of Berks county business men who say that Flower has separated them from their good dollars by representing that the great "Persian secret" brickmaking method would pile up fortunes for them.

Technically, Leimbach in his complaint, charged that Flower had obtained \$2,000 from him by false pretense. Magistrate Koch fixed the bail in the new case at \$1,500.

Throughout the proceedings Flower wore a look of entire contentment. No one would have thought, so care-free did he appear, that he had been making a desperate legal battle since last January against being extradited from New York.

Flower was brought from the jail where he has been confined in a cell since he was arrested by Constable Miles, of Reading.

Many stockholders of the Virginia Clay and Material Company, who live in Boyertown, and whose dreams of getting fortunes through the Persian secret brick have had a rude awakening, went to the hearing. Among them were Charles E. Renninger, a merchant, and Harry Leimbach, an insurance agent, who became one of Flowers' stock salesmen. Charles Spatz, an ex-member of the legislature and proprietor of the Berks County Democrat, was a witness.

## SIMONS WILL GO INTO THE PAVING BRICK INDUSTRY

Joseph Simons, Los Angeles, Cal.'s largest brick maker, is preparing to go into the paving brick business. The Simons Brick Company sees an opening, and if Mr. Simons' plans do not go astray, there will be two paving brick companies in the field next year.

Only one company is furnishing paving brick in Los Angeles. In spite of the lack of competition, the price of brick is little, if any higher, than it is in the east. The average price is about \$17. In the east it ranges from \$12.50 to \$18. Mr. Simons recently returned from a trip east which he took to look up new wrinkles in the brick business. He finds that there is little new to learn. A good paving brick is made here, and the price is fair, according to members of the board of public works.

Practically the only fly in the ointment in this section is that paving brick clay must be mixed with another ingredient. This is the clay that is found at Elsinore. Extensive clay banks are found at Santa Monica. Both the Simons and the Los Angeles brick companies have heavy deposits at the shore. The latter manufactures its paving brick near the deposits. Mr. Simons proposes to utilize his great yard in Simonville. This will obviate hauling the finished product from the seashore.

A. A. Hubbard, the brick man of the board of public works, estimates that, with competition in the field, the price of paving brick will fall to \$15. This year the Los Angeles Pressed Brick company probably furnished 6,000,000 brick. The cost falls entirely upon property owners, who pay for street paving under the Vrooman act. The close of the year will see seventy miles of streets paved for 1906 and 1907. Down to Nov. 1, 1906, thirty-four miles of streets were paved. Since that date, ordinances covering thirty-six miles of streets were passed by the council. Several contracts are being held up on account of lack of brick. The holidays have interfered with awarding other contracts. These improvements probably will go over to next year. The most important are about four miles on Sunset boulevard, Aliso street, San Fernando street, Vermont avenue and intersecting streets between Figueroa and Pico streets.

It is probable, therefore, that there will be many brick wanted for next year's work. Based on this year's record in paving, contracts for 1908 ought to aggregate nearly as many miles.

## A READING MAN GIVES IT STRAIGHT

J. Harry Moyer, of the firm of Moyer & Co., brick manufacturers, 725 Penn street, Reading, in discussing business, said: "People who have money today are the ones who have always had it. The ones that are all the while saying that a panic is coming, or that money is scarce, never had any money and do not have any to-day. Our bills are paid more readily now than ever before. Our debtors are paying cash, and checks very seldom pass through our hands. The orders are coming in faster than we can fill them, and collections are excellent. I have no fear of a panic, and no one else would if they would attend to their own business and let the money take care of itself."



## CLAY RECORD.

### CLAYS OF CENTRAL GEORGIA

The occurrence of white clays in central Georgia has been known for many years, but the quality and extent of the deposits and their availability for use as the basis of large industries are being but slowly recognized.

The clay area extends from northeast to southwest entirely across the State, along what is called the "Fall Line"—where the streams of the region tumble from the uplands to the coastal plain. In width it ranges from a strip only a few miles wide between Bacon and Columbus to a zone about 30 miles wide in a north-south direction just west of Macon and near Fort Valley.

The clays vary from the purest, softest, flourlike kaolin to the hardest, refractory, flint fire clay, and the beds are from 6 to 35 feet thick. The kaolins are adapted for use in the manufacture of porcelain, sanitary ware, encaustic tiling, etc., and the fire clays are suitable for high grade fire brick and other uses.

In order to point out the extent, quality, and accessibility of these Georgia clays, descriptions of many localities at which they occur and analyses of the products of various mines are included in a paper in the United States Geological Survey's "Contributions to Economic Geology, 1906" (Bulletin No. 315). Copies of this report are ready for distribution. The paper, prepared by Mr. Otto Veatch, is intended to be suggestive merely and is neither exhaustive nor final.

The only industries in this region that now utilize these clays are two plants which manufacture fire brick and a small pottery recently established at Augusta, Ga., for the manufacture of porcelain. Clay mining is carried on at several places, and the product is shipped to fire brick and terra-cotta manufacturers, to Ohio and New Jersey potteries, and to northern paper mills. About 25,000 tons are mined and shipped annually. No washing plants are installed at any of the mines, the clay being shipped in the crude state. The installation of washing plants and steam shovels will materially increase the profits made in mining these clays. The enormous profits that may accrue from other forms of mining are not to be expected in the clay industry, but by economical management and by properly handling the material a reasonable return on an investment can be obtained.

### OPERATIONS OF THE DRAINAGE BOARD

The drainage board and the National Brick Company, Chicago, have entered into an agreement as to the right of way of the north shore auxiliary channel, which passes through the land of the latter company. The brick company has given to the sanitary district twenty-four of the sixty acres which it owns on the east line of the township of Niles, extending from Tuohy and Howard avenues on the north, valued at about \$70,000. The brick company will excavate the channel through this land and will receive in consideration for the land and the excavating all of the clay from Pratt avenue, about four and one-half miles, to the Northwestern railway. It is to be taken out at the rate of 100,000 cubic yards annually. No money entered into the transaction. It is believed the agreement is equitable to all parties concerned.

### THE RAYMOND 1908 CALENDARS

The C. W. Raymond Company, high-grade clay machinery manufacturers at Dayton, Ohio, have just issued or distributed a set of 1908 calendars that are as fine as any heretofore presented to the CLAY RECORD, and deserve a place in the home of any clayworker. The subjects are: "The American Princess;" "Our Matinee Girl;" "Nothing Doin'" and "Our National Flower." It would be a pretty good judge to decide which are the best.

Only a limited number of these calendars have been sent out. If you have been overlooked, by writing the firm and give them information as to your clay plant they will send you one of your choice.

### BRAZIL PLANTS LAY OFF MEN FOR LACK OF CASH

On account of the inability to secure the cash with which to pay off their employees, the Sheridan Brick Works has been shut down until the money situation becomes easier. The Brazil Clay company has laid off part of their force, and the Hydraulic Press Brick company has reduced their working time to eight hours and a half a day on Saturdays. The report that the Crawford & McCrimmon company had laid off half their employees in the foundry and machine shops is without foundation, as the plant is working full time.

### PRODUCTION OF GOLD AND SILVER IN THE UNITED STATES IN 1906

The production of gold and silver in the United States in 1906 is shown in the following table in approximate distribution by states and territories. These figures are the result of conference and adjustment between the Bureau of the Mint and the Geological Survey, and are accepted as final by the two bureaus. The data as represented in this table are ascertained from the bullion deposits in the United States mints and assay offices and by statements from the smelting and refining establishments. It shows in brief the amount of the precious metals refined during the year. The production of gold in the United States during 1906 was \$4,373,800 as against \$88,180,700 for 1905, a gain in 1906 of \$9,103,100. The principal gain was in Alaska, which amounted to \$6439,500. Nevada's gain in gold was \$3,919,500, Oregon's \$75,200, Arizona's \$55,800.

The greatest loss in gold production in any state was in Colorado, where there was a decrease of \$2,766,700. The next largest loss was in Montana, \$367,300. California lost \$364,200, South Dakota \$300,000, Washington \$267,000, Idaho \$30,000, North Carolina \$13,000, South Carolina \$20,500, and Wyoming \$18,000. There was also a loss in Georgia.

The total production of silver in the United States during 1906 is given as \$6,517,000 fine ounces, of the commercial value of \$38,256,400, as against \$6,101,600 fine ounces, of the commercial value of \$34,221,076 in 1905. The net gain in the production of silver over that of 1905 was 416,300 ounces. There was an increase in the production of silver during 1906 in Arizona of 363,500 ounces, California 435,500 ounces, Idaho 710,600 ounces, and in Utah 1,168,200 ounces.

The greatest loss in the production of silver during the year was in Montana, amounting to 914,400 ounces, and in Colorado of 405,400 ounces. The average price of silver for the calendar year 1905 was \$6.01027 per ounce, as against \$6.07531 for the calendar year 1906.

**SAND OR LIME BRICK OR BLOCK NEWS**

The Silley (Mich.) Brick Co. has shut down its plant for the season, after making a very profitable run.

The Owensboro (Ky.) Sand-Lime Brick Co. has closed its plant for the winter: the money stringency is partly accountable for this.

R. H. Graham, Smithville, Tex., is considering the building of a sand-line brick plant with 20,000 daily capacity, and wants estimates on same.

It is practically settled that the Diamond Stone Brick Co., Wilmington, Del., will establish a branch plant in Connecticut and probably in New London.

The Luverne (Minn.) Pressed Brick Co., a sand-line brick concern, is now ready to operate its plant. Prospects are splendid for a paying proposition.

The Granite Brick Co., of Columbus, Ohio, will have open doors during the stay of the members of the National Association of Manufacturers of sand-line products at Columbus, Ohio.

The Progress Brick Co., Schenectady, N. Y., has been incorporated with \$35,000 capital stock. Incorporators are: E. W. B. Schoradt, Paul Schmidt and Joseph Gritzbank, of Schenectady, and several others.

The Composite Brick & Tile Co., Oklahoma City, Okla., has been incorporated with \$250,000 capital stock. Incorporators are: R. E. Brownell, Clark Braden, W. C. Burke, C. E. Johnson, and Charles W. Jones.

The Pocomoke Perfect Brick Co., Cape Charles, Va., incorporated with J. T. Daniel, president, J. R. Parson, treasurer, and J. P. Butler, secretary, will erect a two-mill plant costing \$40,000, and want sand-line brick machinery.

The Ohio Valley Concrete & Building Co., Parkersburg, W. Va., has been incorporated with \$25,000 capital stock to manufacture building blocks, tiles, etc., of sand and cement. H. V. Reese, C. T. Parks, F. A. Parrish and others are interested.

The Sioux Falls (S. Dak.) Pressed Brick Co. has a capacity of 3,500,000 sand-line brick per annum, and has had an unbroken record of prosperity. The officers are: B. Stevenson, president; Edward Johnson, vice-president, and A. J. Johnson, secretary and treasurer.

A number of El Reno (Okla.) business men have organized a \$100,000 company to erect a large factory for the manufacture of building blocks, drain tile, sewer pipe, etc., out of cement. They expect to supply the needs of Oklahoma, Texas, Arkansas and other states.

T. M. Ferguson, R. H. Sharp, C. W. Herb, A. F. Emminger and Michael Leslein, a majority of the members of the directors of the Sharp Sand-Lime Brick Co., of Columbus, Ohio, have called a meeting to dissolve the corporation. The plant in the Hocking Valley has been transferred to another company.

The Wilkes-Barre Cement Brick Co. has been organized with \$100,000 capital stock at Wilkes-Barre, Pa. The following officers are elected: R. A. Reed, president; J. E. McKeown, vice-president; Lewis Becker, treasurer; George Russell, secretary and general manager. They will manufacture brick in the building at Delaware and North Pennsylvania avenues.

**POTTERY NEWS ITEMS**

The Camden (N. J.) Pottery Co., has been incorporated with \$200,000 capital stock. The incorporators are Murrell Dobbins, T. M. Dobbins and Geo. W. Jessup.

The Allison Pottery, at Holly Springs, Miss., is turning out jugs, crocks, etc., and is rushed with orders at the present time.

The Dunlop & List Pottery Co., Matawan, N. J., has been incorporated with \$20,000 capital stock. Incorporators are Edward L. Lisk, W. H. K. Dunlop and Florence Tofts.

The Ceramic Supply Co., Wheeling, W. Va., has been incorporated with \$50,000 capital stock by C. W. Franzheim, John H. Taylor, H. A. McNichol, A. M. Maddox and others.

The Kirkwood Pottery Co., Roseville, Ohio, has been incorporated with \$15,000 capital stock by A. P. Clark and W. E. Worstall, of Zanesville, and J. S. Miller, W. S. and C. S. Meyers, of Roseville.

The Marshalltown (Iowa) Pottery, which has been closed for some time will be reopened and a new clay found near Hickory will be used and enameled ware will be produced. John Martin is the superintendent.

The Brockman Pottery Co., Cincinnati, O., has been incorporated with \$75,000 capital stock by C. F. Brockman, L. E. Brockman, Edward A. Brockman, Frank Heyner and J. D. Breed. They will enlarge the Brockman Pottery on Richmond street.

## **The Lightest Running Dryer Car Made**

**having a dust proof roller bearing box made of steel. No oil needed. Write for description and prices**



**Vulcan Iron Works**

MASON CITY,  
IOWA

## MISCELLANEOUS ITEMS

G. T. Taylor, Gabbettville, Ga., is in the market for brick making machinery.

The Schuster (Ala.) Brick Co., with its new equipment is turning out 35,000 brick per day.

Frauenthal & Robinson, Heber, Ark., put in a hand brick yard in September, but will equip it with machinery by the time to open in the spring.

The Pittsburg (Kansas) Sewer Pipe & Conduit Co., will add more kilns to their plant so as to increase the capacity and take care of the trade.

The Dedier-March Brick Works at Weber, Middlesex Co., N. J. have laid off some of their men so that certain parts of their plant can be overhauled.

After a delay of several months in testing the shale, Messrs. Straight Brothers of Fonda, Ia., have secured land and right-of-way and will build a large brick and tile plant.

The Texas Koalin Co. has been incorporated under Maine laws at Portland. J. E. Manter is president; C. E. Eaton, treasurer and M. W. Baldwin, clerk; all of Portland, Maine.

Capitalists are organizing at Watsontown, Pa., for the erection and operation of a brick plant on an extensive scale, using a rich deposit of shale which has been found at that place.

The Sumas (Wash.) Fire Brick Co. has been incorporated with \$150,000 capital stock. The incorporators are H. A. Wilson, R. S. Lambert, T. Brown, C. Brown, Leonard Keinig, and M. Keinig.

The Lexington (Ky.) Brick Co., has amended its charter and increased the capital stock to \$40,000. Stockholders are W. S. Cramer, F. A. Cramer, H. C. Cramer, M. C. and O. R. Cramer.

The Canada Brick Fields, Ltd., London, Ontario, has been incorporated with \$100,000 capital stock. The directors are J. L. Thomas, P. W. D. Broderick and C. B. Edwards of London, Ont.

Supt. Frank McDonald of the Minneapolis, Minn. workhouse has had borings made and found a body of clay twelve foot in thickness that is admirably suited for making brick also a twelve foot strata of Potter's clay.

The Winchester Rock and Brick Co. has been incorporated in Augusta, Maine, with \$500,000 capital stock, president is J. H. Shedd of Arlington, Mass, G. H. Elwell of Boston, treasurer and H. L. Bassett of Augusta, clerk.

The Humboldt Brick, Stone & Power Co., will build a brick and tile plant near Freshwater, Cali. The capital stock is \$200,000. C. P. Soule is president, E. W. Webster, Prof. Charles Swenson and several others are the stockholders.

The Granton (N. Y.) Manufacturing Co., has been incorporated with \$150,000 capital stock. Incorporators are Hiram H. Walsh of Newburgh, John M. Bell and Horton H. Cunon of Rutherford, N. J. The company will make brick of all kinds.

W. C. Davis of Boston, Mass and Readsboro, Vt., has secured an option on the Burnham Brick Works at Montague City, Mass. and will organize a stock company with \$100,000 capital to continue the brick yard and also manufacture aluminum.

J. P. Jones & Son, Newman, Ga., will erect a brick plant using Chattahoochee River clay.

The plant of the Rome (Ga.) Brick Co. has shut down to make the necessary winter repairs.

The Martin Bros., tile works, at Greene, Ind., is being taken down and removed to Dunkirk.

The Corwith (Iowa) Brick & Tile Co. has been incorporated with \$20,000 capital stock, by L. Larsen and others.

The manufacture of pressed brick has been started at Mason City, Iowa, and brick peat is used as a fuel to burn them.

Joseph H. White & Sons, Easton, Md., are installing a plant to make brick by the Martin system, which includes a steam brick dryer.

The F. H. Goss Brick Co., Tacoma, Wash., has increased its capital stock from \$25,000 to \$50,000, and will increase the capacity of the plant.

T. P. Lofland has sold his interest in the A. H. Lofland & Bros. brick works at Milton, Del., to his brothers, who will continue with the business.

Phil Nagle, of Newport, Wash., will establish a brick works on the Idaho side of the river on his property, where excellent clay has been discovered.

Wm. M. Curry, St. Bernard, O., is about to start a brick works, and would like plans and suggestions from machinery and supply manufacturers for this purpose.

Wilson & Cassier, of Cedillac, Mich., have closed down their Harrietta yard and completed the year's business. It is expected they will improve the plant in the spring.

Claiming that he can lay 4000 brick an hour, Ben Jones, of Pottstown, Pa., is arranging a match with John Crabb, of Reading, whose record is 11,000 brick in three hours.

Bloomington, Ind., is to have a new modern brick-making plant. The factory will be built in the spring on land owned by A. H. Zimmerman, of Brazil, who will organize the company.

Seventy carloads of material and machinery has been shipped into Carlisle, Ia., with which to build a \$40,000 brick-making plant. William McKissick, of Adel and DeSoto, is building the plant.

The Lester Clay Co., Attapulgus, Ga., which is capitalized at \$75,000 has completed a Fuller's Earth plant and is now engaged in developing the deposits. A. B. Beville is the general manager at Jacksonville, Fla.

The Burnwood (Pa.) Brick & Tile Co. has been incorporated and will build a plant costing \$25,000, twenty-eight acres of land has been sold to Scranton capitalists for this purpose by N. W. Lee of Ararat township.

The Sheldon Brick Co. and the Barr Brick Works, at Urbana, Ills., have been closed for the season, after having made nearly 18,000,000 brick. J. W. Stipes, head of the Sheldon Co., states he has not as many brick on hand this year as last at the closing time.

The Detroit (Mich.) Vitrified Brick Co., has commenced to building of its 75,000 daily capacity brick plant at Co-runna. The capital stock of the company is \$250,000, and the officers are: Frank Schmidt, president; E. J. Jeffries, secretary and Joseph Kaiser, treasurer.

The plant of the Sandusky Portland Cement Co., at Syracuse, Ind., has been closed down to make extensive repairs, etc.

The Bull Creek Sand & Gravel Co., 5 W. 12th st, Columbus, Ga., want an equipment to separate stiff mud brick clay from sand and gravel deposits now being developed.

M. J. Bannon, of Louisville, Ky., has joined with Henry M. Clements and others of Carmelton, Ind., to build a nine-kiln sewer pipe works. The capital stock of the company will be \$100,000.

The Finkle Brick Yard Co., Marshalltown, Ia., are now turning out a high-grade pressed brick equal to any in the state. Another kiln, the fourth, is just being completed. The plant will be run at its fullest capacity.

Mr. John Sullivan, of Lansdowne, Pa., has just installed a "Martin" latest improved Style "A" steam power brick machine in combination with pug mill, etc., furnished by the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pennsylvania.

Mr. Geo. W. Washburn, Catskill, N. Y., has placed his order with the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa., for two latest improved all iron and steel "Martin" Style "P" steam power brick machines in combination with all iron pug mills, etc.

The West End Brick Co., Allentown, Pa., are at the present time installing the "Martin" patented rack pipe steam brick dryer system of 18,000 daily capacity, including the "Martin" automatic cable delivery system, this being installed by the Henry Martin Brick Mfg. Co., of Lancaster, Pa.

The Blackwell (Okla.) Brick & Tile Co., has increased its capital stock from \$50,000 to \$75,000.

A charter has been granted to the American Brick & Cement Co., Wilmington, Del., capital stock, \$100,000.

L. W. Christian, Weatherford, Texas, contemplates developing some Fuller's earth deposits found near there.

The Graettinger (Iowa) Tile Works has installed a heating plant in their factory and will operate the plant all winter.

The Ogden (Utah) Sewer Pipe & Clay Co., will contract for a rebuilding of its plant on a larger and more improved scale as soon as its insurance is adjusted.

R. D. McManigal has returned from Ft. Smith, Ark., to Logan, Ohio, after being there for eight months installing the new paving brick plant for the Burke Brick Company.

Dr. Warren L. Evans, of Alloway, is to move his Penton brick manufacturing plant a mile from its present site to the West Jersey & Seashore Railway, and will improve same.

Mr. James B. Oberly, of Wilmington, Delaware, is at the present time installing the "Martin" patented system of handling and drying the brick on his plant, of 24,000 daily capacity, and which are being installed by the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa.

Col. A. B. Peake, of Valley City, N. Dak., and Hon. J. F. Brodie, of Dickinson, owners of coal mines at Dickinson and New Salem, have opened up a new mine at the new town of Scranton on the C., M. & St. Paul railway extension, and are also interested in a company which will install a pressed brick plant in the spring.

## **The GILLETT DOORLESS Hot Air FIREBOX For Blast Kilns**

Patent No. 792,769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

**A. GILLETT & CO.,**  
Factory, St. Louis, Mo. **ALEDO, ILL.**

## **DIRECT HEAT**

# **DRYERS**

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**  
62-64 William St. **NEW YORK CITY**

## CLAY RECORD.

## DUMP CARS FOR SALE

A few good "Main Line" Dump Cars. Will be put in A-1 condition. Write for description. Detroit Car Building and Equipment Co. Detroit, Mich.

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.  
Engines, Rollers, Crushers, Drying Pipes, etc. If you wish to buy or sell write  
Brick and Tile Machinery  
Secor, Ill.

## FOR SALE

One power Press, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.  
American Enamelled Brick & Tile Co.  
1 Madison Ave. New York

## NOTICE

To American Clay Machinery Manufacturers—A sound proposition for N. W. Albert, Can. Articles of Association have been signed for Eason's Brick & Tile Co., Ltd., for \$2000, of 200 shares at \$10 each at par. To equip a complete brick making plant on field of 60 acres, proved at 40 feet, owned by the Henry Martin Brick Machine Mfg. Co., of Pa. U. S. A., whose tests are satisfactory for a good sound brick.

The situation of the field is close to the Railway siding of Cuyahoga on the C. N. R., 6 miles from Vermilion City. The full size of the famous Sackett's Valley and the Vermilion district, where brick are now selling at \$20 per thousand and in great demand at that.

We desire to correspond at once with any firm who will put a fully equipped up-to-date plant on the field, on an expense shared by fully paid up stock, who may recommend a capable manager, to engage himself with our company if salary agree upon. Address

ALEXANDER JASON  
Planner, Builder and Contractor  
Vermilion, Ill.

Solicitor  
K. V. Fietthouse, Esq., L. T. R.  
Vermilion, Ill.

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 2000 to 10000 per hour. Great bargain. Write for particulars.  
GREAT EASTERN CLAY CO.  
30 Cortland St., New York

## BRICK PLANT WANTED AT JACKSONVILLE

One of the best places in the whole country to establish a small up-to-date modern Brick Plant, local consumption 1,000,000 annually. Abundance of good clay. No competition. Will give detailed information upon application to the  
BUSINESS MEN'S ASSOCIATION  
Jacksonville, Illinois

## POSITION WANTED

I have had twenty-two years' experience in clay, brick, hollow brick and building tile. Understand making magnesian and silica brick; want position as superintendent.

W. T. J., care Clay Record,  
Chicago, Ill.

## POSITION WANTED

Young man desires a position as Superintendent or sales manager, understanding stiff mud and dry press process. Has traveled all over.  
TRAVELER, Care Clay Record,  
Chicago, Ill.

## FOR SALE

One No. 2 Potts & Co. Clay Disintegrator, Used only last month. Address  
C. ROLFENBURG SONS  
Aurora, Illinois

## WANTED

12 offices covering entire brick, clay and building material field. Positions open for office, sales and technical men. Service confidential. Write, stating age, experience and location desired.  
HAFSLUND  
305 Broadway, New York City, or  
1030 Hartford Bldg., Chicago, Ill.

## BRICK YARD FOR SALE

Old established yard in good town of 8,000 people, with good country surrounding. 40 acres, good kilns and sheds. Good reason for selling. Call on or address  
CHARLES MCNEAL  
Maryville, Mo.

## FOR SALE.



Right and left-hand No. Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,  
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 18, 20 and 25 pound. For prices, address  
ATLAS CAR & MFG. CO.,  
Cleveland, Ohio.

## FOR SALE

Brick manufacturing plant, capacity 40000. Six mould dry press, small planing mill and lumber yard. Good shipping territory and an established paying business. Address  
J. J. CAREY  
CLAY RECORD  
Chicago, Illinois

## PLANT FOR SALE

A practically new brick and tile plant in north west Missouri for sale on account of health have decided to sell at about one-fourth cost. Soft mud and stiff mud machinery, engine, boilers and sheds for a 1000 brick daily. Two clamp kilns and six wet kilns. Prompt rates steady and can't supply the demand at good prices.  
Write to J. WYNN  
Weldon, Iowa

## WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the make of the pan, together with best price.  
CLEMENT JUNGERS  
Sreator, Illinois

## PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new dry press Brick Plant. Plenty of shale, and good market for all the brick. Address  
DENIS, care Clay Record,  
Chicago, Ill.

## FOR SALE

Second-hand presses of different sizes and makes. Good machines and low prices.  
THE FERNHOLTZ BRICK MACH. CO.  
1440 Old Manchester Road,  
St. Louis, Mo.



In better shape, of New 11 and 12 ft. 4 Wheel, \$3.00 8 Wheel, \$3.25. Sold by all dealers  
R. A. HART, 41 White St., BATTLE CREEK, MICH.

## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,  
Care Clay Record, Chicago, Ill.

## CARS WANTED

WANTED—Second hand cars and truck. Give low est price and condition in first letter.  
Box 81,  
Independence, Iowa

## PALLET FOR SALE

We have a large number of second-hand wood pallets, size 34 by 10 inches. Can be bought cheap. Address  
MARTIN  
Box 507  
Lancaster, Pa.

## POSITION WANTED

Position as Superintendent or Manager of Paving Brick Plant, thoroughly competent in take charge of construction and operating in every detail. Have good position at present, but dislike location. A reference. Eastern plant preferred. Address  
"PAYER," care of CLAY RECORD  
Chicago, Illinois

## FOR SALE

One No. 28 special double shaft pug-mill, top and bottom discharge, 12 foot tub; good condition, manufactured by American Clay Working Machinery Co., Sandusky Portland Cement Co., Sandusky, Ohio

## ASTORIA

One of the best places in the whole country to establish brick making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.  
728 Chamber of Commerce  
Astoria, Oregon

## SHALE CLAY FOR SALE

Have bed of red, chocolate and blue shales exposed full length of 3,500-foot railway cut and to height of 80 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow brick, brick, paving block, tile, sewer pipe. On river, level ground for factory sites. Twenty-five acres for sale.

Write Inter-Urban Railway Co.,  
Des Moines, Iowa.



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Single Copies, 10 Cents

**ADDRESS OF PRESIDENT DUERR TO NA-  
TIONAL ASSOCIATION OF MANUFAC-  
TURERS OF SAND-LIME PRO-  
DUCTS AT COLUMBUS, O.  
DECEMBER 4, 1907**

It is with pleasure that I welcome you to our fourth annual meeting. We are to be congratulated on so good an attendance; it at least indicates that there was some cash to be had from the banks in your several communities. I trust that we, neither as individuals nor as an association, are subject to the suspicion and lack of confidence that has placed so grand and prosperous a country as ours in so conspicuously ridiculous, not to say dangerous, position as to be almost panicky.

How easy it is to forgive ourselves the mistakes made in sand-lime productions when we hear of old, tried financiers, men of science and of letters, crying ruin, because we have a man at the head of this nation who knows right from wrong—who can, and does, assert it. I can only pray that this association at this meeting, and at all other times, may emulate the great ideals which our esteemed president lives up to.

I do not wish to be understood as being optimistic or pessimistic. I have considered the pros and cons of the sand-lime products industry in all its phases so many times that I am becoming more and more conservative over it. Notwithstanding that conservatism, I believe today in the future of the sand-lime products industry just as firmly as I do in the future of our nation.

As we are leaving behind us a period of frenzied finance, a period of irresponsible, questionable business transactions, and moving into a new era of truth and integrity, so also is the sand-lime products industry bound to pass through a transition period—from the period of irresponsible promotion, a period of unreliable production, to a period of greater intelligence and more thoroughness.

As we look back over the last five years in this industry, we cannot help but feel that we have been in a very chaotic state. The time seems ripe for us to take stock. Why? Because of the failures, and because of the necessity of the

future of this business. We must make the public believe in us; and to make the public believe in us, we must first believe in ourselves. Just so long as we are producing a material indifferently good, when in the depths of our own hearts and consciences we know we can do better, just so long we cannot obtain the recognition to which we are entitled.

Gentlemen, you know that there is not one of us who cannot make a better article than he is now producing, at no greater cost, if he will make the effort.

If this association is to continue for any good purpose whatsoever, and accomplish anything, it must stand unqualifiedly for truth. And when I say truth, I mean the truth of the good worth of its materials, for which this organization stands.

Let us briefly glance over the history of the past few years, since the advent of this industry, and note what has been done.

From the consular reports we hear that a great invention has been discovered in Germany which is to revolutionize the building industry in many communities. This discovery has been commercialized and is showing wonderful success. Next we hear of the organization of certain companies being promoted for the purpose of manufacturing this wonderful building material under rights which have been given by dispensation; and if you wish to reach that great goal of your ambition, it is incumbent upon you to obtain, immediately, a franchise. Unless you grasp the opportunity at once, your neighbor is going to take it away from you and, consequently, you soon find yourself possessed of the right to manufacture this building material under the special dispensation which no one else in your community can have. Your opportunities are without limit. You have the world at your feet. The result, in cold facts, is that the franchise for which you paid good hard cash is worthless because you find that there are other franchises, equally as good, being given away with a package of machinery, for which you paid good money. You find yourself possessed of a badly designed plant, with machinery wholly inadequate for the purpose intended. On the top of all this you have gone into a business which you

are led to believe required no knowledge, and you find yourself entirely out of place, without knowledge or cash. What has been the result? Failure, discouragement, heartaches, backaches, even hardships for many, with but few successes.

The surprise to me is that there have been so many successes. The fault cannot be placed upon any one thing, but upon everything.

Can we remedy the situation? I say, yes. What shall we do? First, as individuals, second, as an association, let us firmly make up our minds that we are going to make the best possible products that can be made. When we have done that, we will have the public with us. Have we the appliances necessary to do this? Again I say, yes. There are a number of good reliable concerns, some members of this association, who are capable of producing, and who do produce, good machinery. Do not let us tempt them, however, to neglect our interests by inadequate compensation. Let us demand the best from them and pay the best prices.

Again let me reiterate that there is not one of us who cannot make better brick at no additional expense. This may seem like a broad assertion, but I believe that every one of us can prove it to our own satisfaction if we make the effort.

The public is going to demand better results from us. I do not mean to say that they are going to single us out, but the demand is becoming general in all lines, and we cannot expect to be overlooked.

Last summer one of our members addressed a letter to the association, stating that he was being discriminated against by the Board of Fire Underwriters', in that they were placing the highest rate of insurance upon buildings built with his brick, classing the brick in the same class as concrete block; which meant, practically, in the same class as a frame building.

And, by-the-way, I only recently saw an article in one of the cement journals headed:

"Methods that contribute to success, and some of the causes of failure. Manufacturers beginning to realize that experience is essential to success."

The article under this heading is prefaced by the following remarks of the editor:

"In publishing the following communications on the subject of concrete block, it is with the conviction that the time has arrived when the manufacturer must discriminate between good and bad methods if the industry is to prosper. Excellent block, answering every structural requirement, have been made in the past and are being manufactured today. On the other hand, there have been many failures.

"From time to time 'Cement Age' has published communications from experts, who have explained the secret of making good block. Some have been advocates of the so-called dry or hand-tamped mix, and others have had equal success with the hydraulic process. All agree, however, that to achieve success there must be the knowledge or experience required in any other industry.

"It is safe to say that in undertaking the business many blockmakers were chiefly influenced by the conviction that it required no previous experience and could be intrusted to workmen of ordinary intelligence. Here and there very in-

telligent and capable men have failed to master the secret of making good block, and, being too honest to deal in an inferior product, they have abandoned the enterprise. It is with the hope of assisting blockmakers of this class that we publish the following letters, one from Mr. J. F. Murray, manager of the Pocatello Pressed Stone Co., Idaho, stating why he regards the concrete block as a failure, and replies thereto by Messrs. H. H. Rice, of Denver, and Noyes F. Palmer, of Brooklyn, both experts on the subject of block and among the pioneers of the industry."

The subject is too lengthy for us to go into in detail. It is sufficient for us to try to benefit by their experience, if it is possible.

To get back to the subject in hand. After more or less correspondence, a committee was appointed to take up the matter with the National Board of Fire Underwriters, Chicago. A meeting was arranged by the secretary and was attended by a committee of your association.

The reply to our statement that we felt we were being discriminated against was, "We know nothing about your materials, the matter has never been officially before us, and consequently we placed the material on a rating where we felt we were safe until such time as it had been demonstrated to us that an injustice had been done," to which your committee replied, that many tests had been made by laboratories and eminent experts. The question was then asked, "That may be true in individual cases; but do you mean to tell us that all your plants are making uniformly good brick?" I regret to say that your committee was forced to admit that such was not the case. After considerable further discussion and correspondence, it was agreed to frame specifications, which would meet the requirements of a good building material and a good fire-resistive material, these specifications to be submitted for joint adoption and, such plants as made a product which came up to these requirements, were to be indorsed by the National Board of Fire Underwriters. This indorsement entitled the owner of such buildings as were built of such indorsed brick to receive the minimum rate of insurance. I trust that, after careful consideration, you will see fit to act formally upon them. It behooves every member of this association to make brick which will pass these specifications. In my opinion there can be no higher incentive for every manufacturer to make good brick.

I trust you will forgive me for dwelling at length upon this particular phase of the situation. My excuse is that I feel the situation keenly, for I can see no longer need of our traveling blindly.

All of our meetings have been delightfully full of enthusiasm and good work, but I am afraid that before we start for home many of us will have lost that enthusiasm. This condition does not help us. I have given much thought to what might be done to keep up the interest and to continue the work throughout the year, and if I may be permitted to make a suggestion, I would like to ask the association before we adjourn this year, to consider the dividing of the territory, which the association covers, into sections, each section having an executive official who shall call meetings of his section quarterly, or at such periods as may be thought best, and if the members of these sections

are unable to attend the national meeting, to send one or more representatives to the national meeting, who can report the results to the sections at an early day.

Too much work for the individual good of our members cannot be done at the present time. We are in a critical period in our national business affairs. We have a right to expect a period of more or less business depression, although we hope to the contrary. It is a time when we must all curtail every possible unnecessary expenditure, when we must enforce economy. And what greater curtailment can we make, what better economy, than to put our plants on a good, steady, daily output of ultimate capacity? And how can we better accomplish this than by knowing the achievements of our successful neighbor, emulating his results by adopting his methods? Therefore, let us enter into the proper spirit of this meeting and put into practice throughout the year the benefits derived. Let us stand together, and standing uphold the best methods.

### INGENIOUS SCHEME FOR SORTING TILES

While the products of a tile kiln come out as irregular in color, size and shape, as they do at present in many yards, it will be necessary for them to be sorted into different groups, according to the shade and shape of the goods. This sorting may be of an extremely rough character in the case of the commoner tiles, but for better class ware it is essential that it shall be carried out with thoroughness and dispatch.

Unfortunately in large works this sorting takes up the time of several work people, and involves a considerable addition to the cost of the goods—a cost which it is difficult to reduce satisfactorily. This is partly due to the fact that each sorter must work independently, and can only be assisted to a very small extent in his work by mechanical aids.

A short time ago, however, Mr. C. Harzer patented a transporting table for this purpose in Germany, and after running for over a year this table has proved so satisfactory that several other firms have adopted it with equal satisfaction and economy.

In Mr. Harzer's firm there is a daily output of 45,000 red floor tiles, and these must be sorted according to their shade, size, straightness and hardness. This sorting used to employ thirty-two workpeople, but since the use of the patent sorting table, only eighteen hands have been necessary.

The table really consists of a framework upon which runs an endless belt ruled into four divisions, as shown by the dotted lines in the accompanying illustration. Each division of the table corresponds to a certain quality of tile, so that the sorter has simply to place the tiles in the right division of the table for them to be carried away, properly sorted, to the packers, etc. The sides of the table are fixed, and "bridges" may easily be made by laying a plank across from side to side, on which the sorter can stand the saggars as they are brought from the kiln, in order to save time in emptying them. Where the tiles are not burned in saggars an endless band is taken from

the sorting-room to the kiln, and the kiln drawers place the tiles directly thereon, so that no unnecessary handling is permitted.

Incidentally the use of this table produces steady work, because any cessation of work leaves gaps in the tile-covered table, whilst slow sorting leaves greater spaces than is necessary between the tiles. This results in a greater economy of labor, for the speed of the travelling portion of the table can be regulated to suit local conditions. As each workman has a separate table, no confusion of results can take place, and one does not get in the way of another. This enables the quick sorter to show better results than his slower colleague, to his own and his employer's advantage.

It is usually better in practice to use the table mainly for sorting into different shades, and for separating warped or damaged tiles, the goods being tested for accuracy of size or thickness (when necessary), at a second table. This is the more desirable, as first-class sorters for color are not easy to obtain in large numbers, whilst gauging can be easily done by quite young girls and boys.

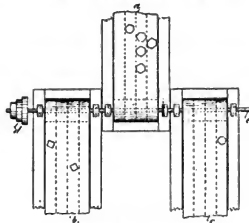


TABLE FOR SORTING TILES

The precise form of the table is of minor importance, that shown in the patent specification and in the accompanying figure being as convenient as any. As will be seen, the endless hands forming the top of each table are all three driven from one shaft (e), the direction of travel being the same in each case. The sorters stand on the outer sides of tables b and c, and the "takers off" for table a stand between tables b and c. At the opposite ends of the tables stretching appliances are fixed, so that each band runs evenly and without noticeable sagging.

The simplicity of the arrangement, added to the comparatively low cost of construction and maintenance, should commend it to tile manufacturers in this country, where, so far as we are aware, it has not been patented.

The Farr Brick Company, of Cleveland, Ohio, who have had the "Martin" patented dryers in operation in their plants for quite some time have now placed contracts with the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa., for an additional "Martin" dryer of 30,000 daily capacity; this brings their daily capacity up to 60,000 brick.



## THE STEAM ENGINE AS APPLIED TO BRICK YARD PRACTICE

W. S. Stafford, M. E.

To adequately trace the history of the steam engine from its inception to the present time, would require much more time and space, to say nothing of knowledge, than the writer has at his disposal. James Watt is generally credited with building the first successful steam engine, but many authorities on this subject claim that Thomas Savery completed the first *commercially successful* steam engine in 1693. In 1705 Newcomen introduced the first successful engine with a piston working in a cylinder. This engine was quite extensively used until about 1765 when Watt perfected his prime mover. It must be conceded that Watt is undoubtedly the father of the present day reciprocating engine, and nearly all the improvements since that time have been along the line of his construction and suggestions. Watt is also the originator of the indicator, an instrument of incalculable value in a steam power plant.

In brick yard construction, one of three classes of engines is generally used, viz: throttling, automatic or Corliss, and a short explanation of each type may possibly interest some of my readers. Very few brick plants require sufficient power to justify the installation of the higher grade types of engines, such as compound, triple and quadruple expansion, or condensing engines of any kind, and for that reason, any further mention of them would be nearly useless in a trade journal devoted to the interests of clay-workers. The throttling or plain slide valve is without question the simplest engine made today. In this type the steam is throttled in the steam pipe, thereby regulating the pressure of steam admitted to the cylinder. This class of engine, as a general thing, is used only in plants requiring small power and where economy and regulation are of minor importance; cost alone being considered.

The most popular type of engine on the market to-day is the "automatic" equipped with what is known as a shaft governor, placed on the main shaft. With this form of governor, steam is admitted to the cylinder at full pressure, the governor varying the point of cut-off in the cylinder instead of steam pressure as in the case of a throttling engine. Shaft governors are made in many forms, but the constituent principle is the same. The governor simply changes the angular advance of the eccentric, controlling the cut-off according to the load the engine is carrying. This type of engine has been found to be particularly adapted to small and medium size direct connected electrical units. The term "direct connected" is applied to a generating unit when the rotor of the dynamo is fixed on the engine shaft. Outfits of this kind require engines running from 200 to 750 revolutions per minute. Close regulation of speed is very necessary in an engine of this kind, as the slightest change in the speed will cause a varying voltage and consequent flickering of the lights. The fly-wheel should be heavier than standard, it also acting as an auxiliary governing medium. On account of the high rotative speed of such an engine, all reciprocating parts should be made very strong, but as light as possible to reduce vibration to a minimum. Bearings should be extra large and kept fairly tight; crank

and cross-head pins should also fit snug, as even a slight looseness will cause a pounding and hammering until the part is ruined.

In modern engine practice the Corliss engine has always been considered the standard of economical engine performance. While numerous installations of other classes of engines will be found to combine equal economy with decided advantages in other ways, nevertheless it is also true that for average power plant conditions nothing can be better than a good Corliss engine. There are many reasons why this type of prime mover is usually more economical and efficient than an automatic or throttling engine. The entire separation of admission and exhaust ports is well known to be the principal source of economy in all slow speed engines. This feature prevents repeated heating and cooling by alternate passage of live and exhaust steam through the same ports. The action of the valves in a Corliss engine, particularly the quick closing of admission ports, is another important feature of this class of engine. This reduces wire-drawing very materially. To explain fully the loss caused by wire-drawing would involve the use of higher mathematics. The great range through which the cut-off can be varied from very early to very late in the stroke is a very decided advantage. However, in purchasing a Corliss engine, intended to carry any great amount of over-load at times, double eccentrics should always be specified. As a general thing it is impossible for a Corliss gear to cut off later than half stroke when operated by a single eccentric. When two eccentrics are used, one for the admission and one for the exhaust valves, the cut-off can be made much later if necessary.

There can be no question that the slow speed of the Corliss engine gives it a longer life. In modern engine practice a piston travel of 600 to 800 feet per minute is usually the limit, as the best results are obtained at these speeds. A Corliss gear requires time to act and a great many authorities do not advise running at faster speed than 100 revolutions per minute. This is, of course, varied according to stroke of engine to keep within limits of piston travel mentioned above. For ordinary sizes keep as near as possible to 600 feet piston speed and you will find that the engine will be more efficient and give better satisfaction. Standard makes of Corliss engines are usually equipped with a fly-ball governor. Of late years a great many improvements have been made on them to meet the demands of modern practice for close regulation, particularly in electric light and power stations.

The internal friction on a slow speed engine is usually less than on a high speed, or in other words its mechanical efficiency is greater. As this friction remains about constant regardless of load on the engine, it is best to buy an engine that will develop the average horse power required at its normal speed and at an economical point of cut-off. Presuming that the internal friction is constant or nearly so, the mechanical efficiency would decrease as the load on the engine becomes lighter. The low clearances on a Corliss engine is another good feature, which helps greatly in securing economical operation.

No steam power plant is complete without an indicator. By its frequent use defects will be discovered and located in

the engine, particularly in valve setting, that could not be accurately determined in any other way. Exact knowledge of the action of the steam in the cylinder is very necessary in order to keep the engine up to its highest possible efficiency. By comparing the brake horse power of the engine with the indicated horse power found by the indicator, the mechanical efficiency is obtained. The instrument also shows admission, release, cut-off and compression, which together, make up what is called steam distribution. Steam consumption can be approximately computed, and cylinder condensation calculated by its use. As stated before, James Watt was the inventor of the indicator and the essential features of the modern instrument are found in the one introduced by him. It has been mainly through the use of the indicator that the engine of to-day has been brought to its present state of perfection.

Too much cannot be said in favor of proper and sufficient lubrication. Friction is one cause for loss of power in a steam engine and close attention to lubrication will go far toward decreasing this friction, thereby increasing the mechanical efficiency of the engine. Above all things use good oil, especially for the cylinder, as the valves and piston are the most delicate parts of the engine. A high fire test oil is always to be preferred, so that it will not evaporate at the steam temperature. Engine oil should not be too thin, so that it can be squeezed out between bearing surfaces, but should be viscid or glutinous and adhesive. Heating will tighten a bearing and will increase the cutting and heating. Poor oil is dear at any price.

The economy of an engine is based on the steam consumption per indicated horse power per hour and can either be determined by actual test or figured approximately from an indicator card. A table made up by one of the best known central station engineers in the country gives the steam consumption, in pounds, per indicated horse power per hour for the types of engines spoke of in this article, as follows.

Throttling .....	40 to 70.
Automatic .....	30 to 45.
Corliss .....	25 to 30.

The above figures are based on 100 pounds steam pressure and average working conditions. Fuel consumption increases or decreases in the same proportion as steam consumption, and it is sure that if an engine requires only half the steam necessary to develop a certain horse power that some other class of engine requires, that you will use but half the fuel. Think this over, and if you are operating a "steam cater," as some engines are called, figure out for your own good how much money you could save in fuel in one year by using an economical engine and the amount on which this money saved, would be a good rate of interest, will surprise you.

Regardless of the type of engine you purchase, let it be a good one of its kind. It is the heart of your plant and is deserving of more consideration than it usually gets. Engines are valuable in direct ratio to their earning capacities. In one case close regulation is necessary for the character of the work to be done; in another economy of fuel is essen-

tial; or it may be both economy and close regulation, while in other cases capacity is wanted and consideration of fuel is of no account.

An engineer's duties should not consist of only opening and closing the throttle valve, and keeping oil cups full. An engine needs other attentions and sometimes can be coaxed to perform exceptional duties, if its peculiarities are understood. Some engineers are entirely too free with the use of a wrench and imagine many adjustments to be necessary. Before an adjustment is made find out, if possible, the nature and exact location of the trouble. This is one of the places where the value of an indicator is felt. Too much guess work has ruined many a good engine and ever afterward the engineer at fault has condemned that particular make of engine as being unsatisfactory. Prejudices of this kind has cost the engine manufacturers many a dollar to overcome.

#### THE PRODUCTION OF LIME IN 1906

The lime production in the United States in 1906 amounted to 3,197,754 short tons, valued at \$12,480,653, an increase over the production for 1905 (which amounted to 2,984,100 tons, valued at \$10,941,680) of 213,654 tons in quantity and of \$1,130,425 in value. The average price per ton in 1906 was \$3.90, against \$3.67 in 1905, an increase of \$0.23.

These figures are reported by E. C. Eckel, in an advance chapter from "Mineral Resources of the United States, Calendar Year 1906," published by the United States Geological Survey and are now ready for distribution.

The distribution of the production by States shows that Pennsylvania, with 624,000 tons valued at \$1,857,754, has first place, its nearest competitor being Ohio, with 331,072 tons valued at \$1,100,133. Maine, Wisconsin, and Minnesota each produced more than 200,000 tons, with values approximating \$1,000,000; and Maryland, Illinois, Massachusetts, New York, and Vermont follows in the order named, with productions of more than 100,000 tons. West Virginia, Alabama, and Connecticut each exceeded 90,000 tons. The value per ton increased in almost every State, the producers giving as cause the increased cost of fuel, supplies, and labor.

Of the total production, 2,647,724 tons were sold for structural uses as building lime, hydrated lime, for sand-lime brick manufacture, for slag cement, and for quick-lime brick; 550,030 tons were used in various chemical industries.

The number of lime burners reporting production was 1,012, and 951 of these, or over 90 per cent, gave information as to the character and quantity of fuel used. Coal alone was used by 549 makers; wood alone by 285; shavings by 3; mixtures of wood and coal were used by 76; of coal and coke by 9; coal and gas by 9; wood and coke by 1; and wood, coal, and coke by 1; gas was used by 6, and oil by 5. The total fuel consumed included 481,241 cords of wood, 22,945 short tons of shavings, 501,081 short tons of coal, 4,008 tons of coke, 24,486 barrels of oil, and 429,978,000 cubic feet of gas, the gas including both natural and producer gas.

From the total fuel consumed the average fuel consumption per short ton of lime burned with different kinds of fuel has been determined, and using average values for heat units in the various fuels, the average efficiency of the limekilns of the country has been calculated. Comparing the theoretical quantity of heat required in burning a ton of lime, as stated in a volume he has recently published with the quantity consumed in 1906, Mr. Eckel concludes that the average limekiln wastes almost exactly half of the fuel put into it.

# PRODUCER GAS POWER, AND A REPORT OF A TEST

By M. P. CLEGHORN, M. E., in the Iowa Engineer.

Engineers of the last ten years have been watching with interest the growth of that simple yet remarkable engineering product, the gas producer for power purposes. While yet in its youth and a rather imperfect state, it has dormant within itself possibilities which, if realized, will revolutionize the field of the prime mover. Gas engines using natural gas, or those lighter hydrocarbons of petroleum are not new to persons who are observing. They have been on the market for a considerable time and have proven themselves worthy of consideration in certain lines. They have been tested, and tested severely, and the results show them to be far ahead of the steam engine from a thermal standpoint, and about on par from the standpoint of reliability. Furnish them with good and sufficient gas and they will hold their own.

The producer for generating gas from coal suitable for use in the gas engine is not so well known, but it is at this time under the scrutiny of the engineering world which is watching with interest the results that are being obtained in the severe commercial tests.

The producer, as built today, is an air-tight fire pot with a grate in the bottom and a double-covered opening at the top through which the coal to be gasified is allowed to pass without admitting a large quantity of air. The coal fire is started and the supply of air is limited, thus forming a large percentage of carbon monoxide, due to the incomplete combustion. This carbon monoxide is the valuable constituent of the gas since it burns to carbon dioxide in the engine and produces the heat for operating the engine. The gas as it leaves the producer is hot and dusty and may contain some tar. It is therefore passed through a scrubber, which is a closed steel cylinder filled with coke over which a quantity of water is sprayed. In this scrubber the foreign matter is removed and the coal gas passes on to the engine. Surrounding the upper part of the producer, or the gas pipe after it leaves the producer, is a water jacket, or vaporizer, as it is called. Water is fed to this and changed to steam by the heat of the gas. This steam is led down to the bottom of the producer below the grate and passes up through the fire with the air. The steam cools the fire to a certain extent, and thus reduces the formation of clinker, besides adding to the gas a considerable percentage of hydrogen, due to the decomposition of the steam. The air and steam may be forced through the fire by means of a blower, or it may be drawn through by the suction of the engine. The former is called a pressure producer, and the latter a suction producer.

The suction producer should have a fuel whose gas is comparatively free from tarry matter, as the apparatus for its removal would interfere with the free passage of the gas. Thus it is that only anthracite coal, charcoal and coke have been used to any extent in the suction producer. The pressure producer will handle most any non-caking coal or lignite, but the necessary apparatus for the removal of the tar or lampblack makes the producer more complicated.

The important constituents in the gas, in either case, are

carbon monoxide (CO), hydrogen (H), and the light hydrocarbons (C<sup>n</sup>H<sup>n</sup>).

The suction producer, being more simple, is the one to be preferred in plants of three hundred horse-power or less. It is not only more simple, but both the initial cost and cost of operation are considerably lower for those sizes.

One of the first commercial plants in this state was installed at the little city of Algona about two years ago. This plant was of the suction type, and was installed for the purpose of furnishing electric current to the city and pumping water for the water system. The engine was of the vertical, throttling governor type, composed of three cylinders, and rated at one hundred-fifty brake horse-power.

TABLE I.  
TEST OF PRODUCER GAS POWER PLANT. 150 B. H. P.  
SUMMARY OF RESULTS.

Number of Run	I	II	III	IV	V	VI
Length of Run—Hours	6	7	6	6	14.063	12.5
Horse-Power Developed	40.13	82.52	156.95	113.27	38.86	63.2
Total Horse-Power Hours	240.78	577.64	939.7	679.62	547.27	790
B. T. U. Devel'd in Work	612782	1470086	2391524	1729623	1392795	2010530
B. T. U. per Lb. Dry Coal	10990	12880	13315	12990		
B. T. U. per Lb. as fired	10740	12470	12905	12500		
Lbs. Coal as fired	363.75	671	941	871.5	1404.75	1077
Total B. T. U. in Coal as fired	3905300	8470600	12143500	10948400	17087200	13100400
Lbs. Ash	59.9	151.5	181.4	89.5	61.5	73
Pr. of unburned Coal in Ash	50.14	67	57.53	42.72		
Total B. T. U. lost in Ash	330100	1307400	1382400	496700		
Lbs. of Coal per B. H. P. Hr.	1.51	1.16	.999	1.3		
Lbs. of Coal per K. W. Hr.				4.1	2.23	
Fuel cost per "B. H. P. Hour	45c	75c	29c			
Fuel cost per "K. W. Hour				1.2c	64c	
Apparent load Factor					.32	.54
Thermal Eff. of Plant	15.69%	17.56%	19.69%	15.79%	9.44%	18.06%

\*Coal \$6.00 per ton

The ignition was effected by means of a mechanically operated electric igniters with adjusting levers for changing the point of ignition. In starting, the spark was obtained by means of an electric battery, but as soon as the engine was up to speed, it was switched over to an "Apple" sparking dynamo. The engine was started by means of compressed air in one cylinder, the air having been compressed into a tank by means of a small compressor run with a gasoline engine.

In every day operation, the engine was belted direct to a 75-KW alternating current generator which furnished current for city light and for running an electrically-driven air-compressor. This compressor furnished air for lifting water from a deep well for the water works.

The producer, as mentioned before, was of the suction type, and of sufficient size to accommodate the engine. The producer was five and three-quarters feet diameter and eight feet high. The vaporizer was really a miniature tubular boiler through which the hot gas passed on its way to the scrubber. The scrubber was a cylindrical sheet-metal tank, four feet in diameter and twelve feet high, filled with coke. Water sprayed into the top trickled down over the coke and in meeting the gas coming from the bottom removed from it the dust and dirt which it contained.

This complete plant was installed by the Fairbanks-Morse Company, and as far as the author has been able to learn, was the first plant of its kind in the state at the time of its installation. On this account, it aroused considerable interest. Some time after its installation, a test of the plant was made by two seniors in Mechanical Engineering at the Iowa State College, Messrs. Wilkinson and Lungren, and it may be of interest to note the results.

Four brake load tests were made, and two tests with generator load. The brake was the ordinary pony brake, and was so adjusted as to give for the four tests, one-fourth, one-half, three-fourths, and full-rated load, respectively. Anthracite pea coal was used throughout all the tests. Space will not permit of a detailed report of the tests, hence only the final results will be given here.

Table I is a summary of results obtained in the several tests.

The numbers I, II, III and IV refer to one-fourth, one-half, full load and three-fourths brake load, respectively; number V refers to the test made with the generator carrying the lighting load only, and number VI with the generator carrying the lighting load and the electrically-driven air-compressor. Since the load was more nearly constant in number VI than V, the load factor was higher, hence better results were obtained.

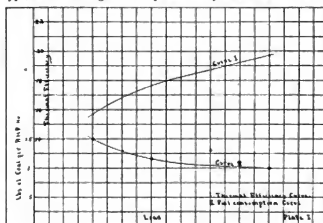
TABLE II.  
HEAT BALANCE AT FULL LOAD.

	B. T. U.	%
In coal as fired.....	12143500	100
Unconverted into useful work.....	2391524	19.69
Lost in unburned coal in ash.....	1382000	11.46
Lost by radiation from producer.....	285000	2.33
Lost by radiation from scrubber.....	39000	.31
For heating water in vaporizer.....	79000	.65
Lost in scrubber water.....	887000	7.3
Lost in jacket water.....	2539000	20.9
Lost in exhaust.....	3856000	31.75
Unaccounted for.....	684976	5.61
Total.....	12143500	100

During the three-fourths brake load test, number VI, some trouble was experienced with the producer, hence we find the results for that run at a variance with those of the other runs. The apparent load factor is the actual KW output for the run divided by the capacity output for the duration of the run. The cost per KW hour as given under runs V and VI includes the coal for banking and starting. The thermal efficiency was obtained by dividing the brake load equivalent in B. T. U. by the B. T. U. supplied in coal as fired.

Table II contains a complete heat balance for the plant at full load. Plate I shows graphically and in a clearer manner the comparative results obtained in the brake tests. These results are interesting and tend to show the superiority of the gas producer plant from a thermal efficiency standpoint, over that of steam.

Realizing the necessity of training the technical graduate in the operation of this prime mover which is to be a worthy competitor of steam, and desiring to do some original research work along this line, the department of Mechanical Engineering purchased, and has just installed, a gas producer and engine. This producer is of the suction type, and is designed to operate on pea anthracite coal.



The vaporizer surrounds the top part of the producer, and the water is heated as the hot gas rises from the fire-pot. The engine is a two-cylinder, vertical, with a throttling governor, and is rated at forty-three brake horse-power. It is arranged with a combination brake and belt pulley, so that the engine can be used with brake load or belt load without changing the pulley. The plant was installed by the Fairbanks-Morse Company.

Before the plant was accepted, it was run at full load for two days, after which an eight-hour, full-load brake test was made. During this test, the plant generated a brake horse-power hour on 1.13 pounds of anthracite pea coal, and gave to total thermal efficiency of eighteen per cent.

During the next few months, the plant will be tested under various conditions, and with various fuels, and the results will be published from time to time as they are obtained. The department hopes, in this way, to bring the engineering public into close touch with the facts regarding the gas producer plant for power purposes.

#### BREWER BULLETIN NUMBER EIGHT

Illustrations, descriptions and specifications of the Number 21 and Number 59 Conical Roll Clay Crushers are shown in Bulletin Number Eight, recently issued by H. Brewer & Company, Tecumseh, Mich.

This is a splendid form in which to show the points of merit in machinery, and makes the details so clear that it is like having a representative before you making the explanations and booking the order. Write for Bulletin Number Eight.

## THE ARCHITECT'S ATTITUDE TOWARD SAND-LIME BRICK \*

By J. M. Marriott, Columbus, O.

The question of the architect's attitude toward sand-lime brick is of such great importance to the architect and his client, and to the manufacturer and the dealers in this material, that I regret exceedingly that a press of business has made it impossible for me to give this subject the time and thought it deserves. I also feel that I am but poorly qualified to properly handle a subject of so great importance.

There are so many architects in this country to-day, that it is impossible for me to say positively what views others hold on this question. However, the best way to learn what other men think, whether they be architect, manufacturer, dealer or prospective builder, is to go to them with the question at hand and ascertain their views.

I have made an effort to do this, with the result that I became convinced that my own experience in the use of your product and opinion as to its merits reflect in a fair way the attitude of a majority of my brother architects.

My attention was first called to sand-lime brick in Birmingham, Ala., where I was in business till 1904. A new plant had been established there and they introduced their product in open competition with other brick.

For several reasons (which it may be well to mention), prospects were exceptionally bright for this new enterprise. In many sections of the south, there is no suitable clay from which to make a good pressed brick; consequently it was necessary to import all first-class building brick from the north. This naturally made the price of brick high and created a market for the new product. Other natural conditions favored the future of sand-lime brick; for in and around Birmingham there were fine deposits of silica sand and the finest of marble lime, the two principal ingredients of sand-lime brick. Thus you see that, with the natural conditions favoring this new enterprise, it was only necessary to unite good management and capital with these natural resources and its success would be assured.

The problem which faced this new company, and which has, I believe, been the obstacle in the path of every sand-lime brick company, was to get the architects to recognize their product, and convince the public of its merits.

How could they convince the architect that this brick was as good as others, that it would stand the ravages of time and the attack of the elements; and that it would produce artistic effects.

Clay brick had stood the test of years, it had satisfied the public and readily adapted itself to the various needs of the architect; but it was expensive. Here was a new product, costing less than its older rival; would it meet the requirements and stand the test? It must have merits which would win the recognition and support of the architects.

The successful practice of architecture is dependent upon many qualifications. One of the most essential of these is the ability of the architect to appreciate the value of new inventions or products in all branches of the building trades. However, his decision relative to such matters must always be influenced by his relation to his client, which as you well

know, is that of mediator, or in many cases the final judge of what is to his client's best interest. To protect our client's interest we must know how to advise him at all times and under all circumstances. We are responsible to our client for the trust he has placed in us and in the advice we give him we must be certain of our position.

Then, too, our reputation is at stake. We must be certain that we are right; in spending the money of our clients we must be even more careful than though we were using our own capital. We cannot afford to give advice unless we are sure the result desired will be accomplished.

What, then, should the architect do if he is called upon to recommend a new product?

He should first investigate and satisfy himself that the product is good, that it will fulfill all essential requirements and that it is in every way what it is claimed to be.

Here, then, is the problem, and the architect must be the judge. He must protect his client's interests on the one hand, and the interests of the producer on the other.

His adverse judgment may mean the ruin of a new industry in which a small fortune is invested. Is it not essential then that he investigate even in detail before committing himself?

Here has been the great trouble with many members of our profession, they have not investigated. They have passed judgment without proper consideration, and instead of aiding a new and worthy enterprise, they have hampered its progress.

When sand-lime brick was first brought to my attention I was confronted with statistics and government reports, I was told the brick had been used in Germany for a hundred years with the best of results. All this evidence was shown to prove that the brick was the equal in every respect to the clay product. Government tests and reports meant more than any other thing, but the one fact lacking was the actual knowledge of the test of time.

To satisfy this grave doubt, I saw this brick tested for strength, and by fire, water and freezing, and but one verdict could be reached; that it was the equal of any clay brick on the market. The result convinced me of the advisability of using the brick and I have since used it or advised its use in several buildings of more or less importance, and that, too, without regret, but you, as manufacturers and dealers, must not lose sight of the fact that you will probably have to convince most every other architect of the value of your product and that, too, in much the same manner as you did me, for we are more or less human, though some of us are not, being from Missouri.

Our attitude, then, towards your product is either negative, neutral or enthusiastic, depending wholly upon your ability to present convincing evidence of its merits.

I believe, however, that you will find us open to all reasonable arguments and for the most part willing to give a meritorious article a fair trial and you must depend upon your product to do the rest.

Like every new product sand-lime brick has much to contend with; the prejudice of a prospective customer, even though he be the client of a convinced architect, is sometimes impossible to overcome; the fierce rivalry of competi-

\* Read at the Columbus meeting of the National Association Manufacturers of Sand Lime Products.

tion with an old and established product is often too strong to successfully resist even with the advantage of a reduced cost; and the enmity of labor and other interests are too well known to need any comment by me.

In conclusion, gentlemen, I may perhaps be permitted to offer a little advice; do not use a laboratory-made brick as your sample, but show the actual product of your plant and, if required, samples of its ingredients; make an effort, by concerted action if necessary, to overcome all unjust competition and the spiteful actions of those who would be gainers thereby, but be careful in so doing that you transgress no laws or commit no acts which would compromise you in the eyes of those of our profession to whom honor means more than wealth, and a satisfied client more than new business.

It is needless for me to suggest that you use every possible effort to improve the quality and value of your product. Your presence here indicates your desire to do this. Let me suggest that all efforts made towards the standardizing of your product both as regards size and quality and any attempts you may make to produce various texture and color effects will in my opinion be steps in the right direction and will, if successfully accomplished, materially increase its sale.

There is one defect in your product which should receive your earnest and careful consideration; namely, its tendency to spall on the edges and corners. I do not presume to state the cause or causes of this tendency; it may be due to lack of homogeneity, it may be the result of the processes of its manufacture, or it may be due to failure to properly season or cure the finished product, but whatever the cause, the elimination of this defect will, in my opinion, materially enhance the value of and the market for sand-lime brick.

Your product is comparatively unknown, your industry in its infancy, your future is and will be entirely dependent upon your own actions and efforts taken both individually and collectively. Your market, however, is world-wide, and personally I see no reason why your prospects for success are not as good as those of any other comparatively new product, and I believe that I am safe in assuring you, gentlemen, that those members of our profession whose friendship is really worth having, that is those of us who, after being convinced of its value and artistic merits, are willing to stand by their judgment and use your product solely because of their belief in it, may be depended upon to extend to you the cordial sympathy and aid which we presume you desire to secure and without which your ultimate success will undoubtedly be a question of a far greater expenditure of time, labor and money.

## BREAKS ITS OWN RECORD IN PRODUCTION

The Monongahela (Pa.) Clay Manufacturing Company has broken all records in respect to its output, and in fact has over-reached its supposed capacity by 40 per cent. In one day 68,500 brick were turned out, the capacity of the plant being estimated at 50,000.

H. B. Simpson, manager, states that advance orders insure work for the two months coming and an additional rush of orders is also expected.

## CLAYS AND SHALES IN CLARION CO., PA.

The clays and shales of Clarion County, Pa., form the subject of a paper by Edwin F. Lines, in the United States Geological Survey's "Contributions to Economic Geology, 1906" (Bulletin 315). The area considered in the report is that known to the Survey as the Clarion quadrangle, the geology of which has been studied for publication as a folio of the Geologic Atlas of the United States.

Both clays and shales are abundant within the quadrangle. Shales that are probably suitable for the manufacture of brick and tile are scattered over most of the region, and in some places are readily accessible to lines of transportation. The clays include both the flint and plastic varieties, but the latter have been little worked. The workable deposits of flint clays, so far as known, are confined to the northern part of the area. The clay was formerly shipped to a considerable extent as raw material, although it had to be hauled several miles by wagon to the railroad, but it has not been mined for many years and the old strippings are now largely covered up. There has been recent revival of interest in the clay, however, as a result of the beginning of construction of a new railroad which will pass near some of the best deposits.

The table of geological formations given in the paper shows that eleven clay beds are associated with the same number of coal horizons. Two and possibly three of these beds contain flint clay; the other clays are of the plastic variety. At present there are but three clay-working plants in the quadrangle. In the future development of the clays of this area the flint clay associated with the Lower Kittanning coal seems to offer the greatest possibilities. Although this clay is not equal in quality to the best flint clays on the market, it nevertheless makes a good fire brick. It is quite possible, too, that the plastic clay associated with this flint clay, if used on the spot, could be made to furnish the necessary bond. Coal and natural gas are available in nearly all parts of the region, and afford cheap and efficient fuel.

## BOY SAVES TRAIN AND PASSENGERS

Robert L. Jones, Suffolk, Va., today averted an awful accident on the Seaboard Air Line and perhaps saved the lives and limbs of many passengers.

Young Jacobs, who works at the brick plant of the Suffolk Clay Company, of which his brother, Harry L. Jacobs, is general manager, discovered a broken rail not far from the brick plant and about a mile from Kilby station.

More than a foot had been broken from one of the rails. This was on a grade and an embankment.

The northbound passenger train was nearly due. Jacobs hustled to a telephone and notified the Suffolk office which wired to Kilby and had the train stopped. In the meantime Jacobs remained on the scene, ready to flag the train in case it passed Kilby.

The train was held until another rail could be substituted for the broken one.

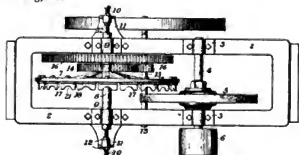
It is supposed that there was a flaw in the rail which had been broken by a freight, recently gone. The freight had passed slowly having stopped at a tank for water.

This makes the fourth time Jacobs has discovered defective rails near the same point.

# NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

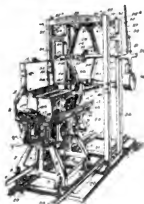
868,577. Machine for Grinding and Finishing Tiles and Other Articles. William T. Nicholls, Wellsburg, W. Va., assignor to The Monarch Tile Company, Weston, W. Va., a Corporation of West Virginia. Filed Oct. 20, 1905. Serial No. 283,620.



In a grinding machine for the purpose described, the combination with a grinding wheel or disk, of a relatively slow-moving carrier having upon one face a plurality of spring clips or holders secured thereto and composed of resilient clamping members, having an edge stop for the articles held therein; substantially as described.

869,271. Machine for Making Building Blocks. Edward H. Somers, Urbana, Ill., assignor of one-half to Frank A. Somers, Urbana, Ill. Filed June 22, 1906. Serial No. 322,887.

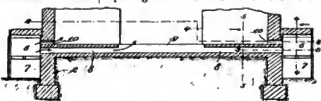
In a machine for making building blocks, the combination of a support; a mold-box mounted thereon free to move relatively thereto; a hopper mounted on said mold-box free to move to and from operative position thereon; and mechanism by which the movement of said mold-box relatively to its said support moves said hopper to and from operative position.



In a machine for making building blocks, the combination with suitable supporting members, of a pair of adjustable cross-beams mounted therebetween; two pairs of co-operating links, one link of each pair being pivotally secured to said cross-beams and the other link of each pair being secured to a presser-block; said presser-block; a shaft rotatably mounted in hangers; said hangers adjustably mounted in said supporting members; and means operatively connecting said links with said shaft, whereby the rotation of said shaft causes said presser-block to be raised and lowered.

869,621. Brick Kiln. Jackson J. P. Casey, Chattahoochee, Ga. Filed March 28, 1907. Serial No. 365,050.

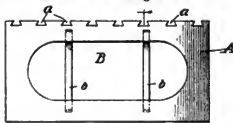
A kiln of the class described having a brick-receiving chamber, furnaces at opposite sides of the brick-receiving chamber, having combustion chambers, flues formed directly in the base of said brick-receiving chamber and connecting the combustion chambers of the respective furnaces and each having a single outlet substantially, centrally between its ends, opening into the interior of the brick-



receiving chamber, the width of the outlets being substantially the same as that of the respective flues, and a second set of flues located above the first mentioned flues and extending from the combustion chambers into the sides of said brick-receiving chamber.

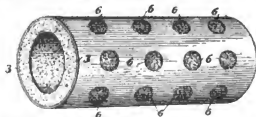
869,770. Building Block. William W. Birnstock, York, Pa., assignor of one-half to Matthew G. Collins, York, Pa. Filed October 31, 1906. Serial No. 341,419.

A hollow building block formed with continuous side and end walls and having a single central elongated opening between the side and end walls extending vertically through the block, and a pair of spaced reinforcing metal struts extending across the opening, and having their opposite ends embedded in the front and rear parallel walls of the block, said struts being arranged midway of the vertical height of the block to form handles accessible from either open side of the block, and the struts being parallel with each other, and at equal distances from the ends of the block for convenience in lifting the latter.



A building block formed with continuous side and end walls and having a single central elongated opening between the side and end walls extending vertically through the block, spaced reinforcing metal struts extending across the opening and having their opposite ends embedded in the front and rear walls of the block, said struts being arranged midway of the vertical height of the block, the inner face of said block being provided with plaster receiving grooves.

869,266. Tile. John F. Schwartz, Alma, Mich. Filed July 30, 1907. Serial No. 386,262.

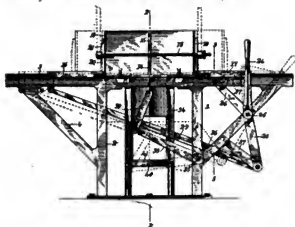


A tile consisting of a cement body, and an exterior layer of protecting material retained on the tile by the adhesive character of the cement.

A tile consisting of a cement body, and an exterior layer of paper or other suitable material permanently united with the cement body and provided at intervals with apertures for exposing portions of the outside cement.

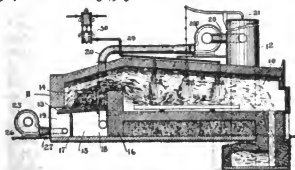
860,828. Building-Block Mold. Charles J. T. Cordes, Waldwick, N. J. Filed May 11, 1907. Serial No. 373,027.

In a molding machine, in combination, a frame, a fixed side wall, a second side wall hinged at the lower edge of said frame, guides formed on said frame between said side walls, slides moving on said guides and having end walls adapted to come into position to form a mold with said side walls, a lever, mechanism connecting said lever with said slides for advancing or withdrawing the same, core prints carried by the inner faces of said end walls, and



In a molding machine, in combination, a frame having oppositely disposed guides, slides mounted movably on said guides and having end walls with core prints formed on the inner faces thereof, a main core print, means for guiding the same to advance into position between said first core prints, said core prints having means at the meeting edges thereof for supporting anchors in the interior of the mold, a fixed side wall, a movable side wall hinged to said frame, a lever, mechanism connecting said lever with said slides and said main core print for advancing or withdrawing the same simultaneously, and a yoke adapted to hold said walls in position.

860,485. Combustion Process. Byron E. Eldred, Bronxville, N. Y., assignor to Combustion Utilities Company, New York, N. Y., a Corporation of New York. Filed Dec. 15, 1904. Serial No. 236,915.

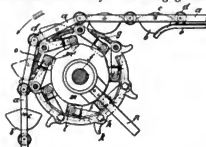


The process of applying heat in a reverberatory furnace which consists in supplying to the heating chamber of such a furnace a compound stratified flame current arising from fresh fuel cool-cooked in the fire-box thereof by a draft current containing an endothermically acting body and from the combustion of coke in the same fire-box, the coal furnishing a relatively cool, reducing flame stratum and the coke a relatively hot oxidizing flame stratum.

860,488. Driving Mechanism for Conveyers. Georg

von Hanffstengel, Stuttgart, Germany. Filed Jan. 15, 1907. Serial No. 352,430.

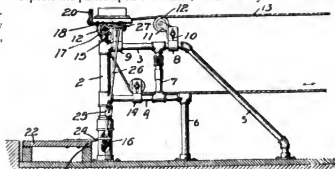
In a driving mechanism for conveyers and the like, a driving wheel and a conveyer passing around and engaging said wheel, the latter having levers pivoted thereto at intervals, one end of each lever projecting from the wheel and constituting a catch and the other end of each lever provided with a roller, and a fixed disk whose periphery is engaged by the rollers aforesaid as the wheel revolves and is formed to move the aforesaid catches gradually into engagement with the conveyer and to positively maintain said engagement while the conveyer is in engagement with the wheel.



In a driving mechanism for conveyers and the like, a driving wheel having levers pivoted thereto at intervals, one end of each lever projecting from the wheel and constituting a catch and the other end of each lever provided with a roller, and a fixed disk whose periphery is engaged by the rollers aforesaid as the wheel revolves and is provided with a succession of separate cams.

870,521. Dump-Table. Frank S. Peck, Menominee, Wis., assignor of one-half to S. J. Hewson, Minneapolis, Minn. Filed March 25, 1907. Serial No. 364,475.

The combination, with a suitable frame having sheaves, of cable conveyers operating over said sheaves, a vertically moving table arranged between said conveyers and normally below the level of the upper section of said conveyers, said table being adapted to receive loaded pallets of brick, the pallets projecting beyond the ends of the table, and means for raising said table to lift it and the pallet thereon temporarily above the level of said cables, and said table returning by gravity when released, to its normal position to deposit the pallet upon the tables, substantially as described.



The combination, with a frame having sheaves mounted therein, of cable conveyers operating over said sheaves, a vertically moving table arranged between said conveyers and normally below the level of the upper portion thereof, said table being adapted to receive loaded pallets of brick, the pallets projecting beyond the ends of the table, and a tilting platform connected with said table and arranged to elevate the table and pallet, said platform being tilted by the weight of the workman stepping thereon, and the table returning by gravity to its normal position when the platform is relieved of the weight, whereby the pallet will be automatically deposited upon the conveyer, substantially as described.



## CLAY RECORD.

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Vol. XXXI. DECEMBER 16, 1907. No. 11

"I like to read American advertisements. They are to  
themselves literature, and I can gauge the prosperity of the  
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the  
very time that advertising should be the heaviest. Ninety-nine  
out of every hundred merchants advertise most when there is  
least need of it, instead of looking upon advertising as the pan-  
acea for their business ills.—John Wanamaker.

## CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick  
and Tile Association will be held at Des Moines, Iowa,  
January 22 and 23, 1908.

The eighth annual convention of the Wisconsin Clay  
Workers' Association will be held at Milwaukee, February  
12, 13 and 14th, 1908. Headquarters at the Hotel Blatz.

The fourth annual convention of the National Association  
of Manufacturers of Sand-Lime Products will be held at  
Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic So-  
ciety will be held at Columbus, Ohio, February 3d and  
4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving  
Brick Manufacturers' Association will be held at Columbus,  
Ohio, February 3d and 4th 1908. Headquarters at the  
Southern Hotel.

The twenty-second annual convention of the National Brick  
Manufacturers' Association will be held at Columbus, Ohio,  
February 3d to 8th 1908. Headquarters at the Southern  
Hotel.

The thirtieth annual convention of the Illinois Clay  
Workers' Association will be held at Peoria, Ills., Jan. 14-15  
and 16th 1908. Headquarters at the National Hotel.

Revenge is never so sweet as when we refuse to enter-  
tain it.

Subscribe for THE CLAY RECORD today. You will get  
from now to 1909 for One Dollar.

Beware of the man who is affected with excessive po-  
liteness. He probably has designs on a slice of your bank  
balance.

Did you ever think what a lot of good you might have  
done in the world if you had n't made up your mind to be-  
gin tomorrow.

The start don't count—anybody can start, but it is the  
fellow who keeps up the persistent jog that wins. This is  
true in advertising.

In this issue of THE CLAY RECORD appears an article on  
the "Steam Engine as applied to Brick Yard Practice," by  
W. S. Stafford, a well known mechanical engineer. This  
article alone is worth to our readers many times the price  
of the whole year's subscription. We will favor our readers  
in the next issue with a splendid article on "Steam Boilers  
as applied to Brick Yard Practice," by the same writer. This  
will be followed by another article on "Economical Power  
plant Auxiliaries." Can you afford to miss this series?

## CHARLES A. REED

Charles A. Reed, president and treasurer of the Chicago  
Retort & Fire Brick Company, died December 3rd, 1907.  
Mr. Reed was born in Montpelier, Vermont, February 12,  
1837. During the early part of his life he was a banker,  
but always had an inclination for manufacturing.

In 1887, he became connected with the Chicago Retort &  
Fire Brick Co., then a small corporation with one plant lo-  
cated at Chicago, and until shortly before his death was  
actively engaged in the management of the company.

Owing to his clear-sighted, conservative judgment,  
the company has had a steady growth and during the past  
year had erected, in addition to the Chicago plant, a new  
and modern plant at Ottawa, Illinois, which was completed  
and in operation in time for him to see the fulfillment of  
his work.

Mr. Reed was a man of sturdy New England character,  
who had but one way of doing business; with him, if a  
thing was right, there was nothing more to be said. His  
honesty of purpose and fairness of spirit made him be-  
loved and respected by all who knew him and his loss will  
be keenly felt by his associates.

He was taken for burial to his old home in Vermont,  
where his family had lived for three generations.

He is survived by a widow and two daughters, and a son  
who has been associated with him in business for the past  
twenty years.

## OBITUARY

James L. Caskey, for twenty-one years a resident of Los Angeles, Cal., and connected with the California Clay Mfg. Company, died at his home, 640 W. 40th street, after a short illness.

Benjamin Hadley, an eccentric millionaire, died at his home in East Somerdale, Mass., of old age. He was 90 years old, never married and at one time ran a brick yard. He had no time to shave and never ate in a hotel or restaurant.

Charles A. Reed, president of the Chicago Retort & Fire Brick Co., died at his home, 4846 Washington Ave., Chicago, after a short illness. He was 71 years of age, and built up a large fire brick business, having plants in Chicago and at Ottawa.

## FIRE! FIRE! FIRE!

The estimated loss by the fire which destroyed the Drury Brick & Construction Co.'s plant at York, Pa., is placed at \$12,500. The insurance is \$9,100.

The Manchester Ave. storage sheds of the Hydraulic Press Brick Co., St. Louis, Mo., were destroyed by fire causing a loss of life and damage to property to the extent of \$7,000.

The blacksmith shop of the Gadsdell (Ala.) Brick Co.'s plant on the east side of the Coosa river burned the shop and damaged the plant estimated at \$6,000 partially covered by insurance.

An overheated kiln set fire to the drying sheds in the Brush Brick Works, 975 Bailey Ave., Buffalo, N. Y., and the entire plant narrowly escaped destruction. The loss did not exceed \$1,500, fully insured.

Fire did \$30,000 damage to the plant of the Baltimore (Md.) Vitrified Clay Co., located near Westport. The clay dryer, engine and boiler rooms and storage rooms were ruined. Plant fully covered by insurance. Joseph R. Wilson is the manager of the company.

## BUILDING OPERATIONS FOR NOVEMBER

According to expectations, building operations during the past month have suffered a considerable decrease, as compared with November, 1906. Official reports from forty-seven cities throughout the country, received by The American Contractor, Chicago, and tabulated, show a loss in the aggregate of twenty-nine per cent. Fifteen cities scored a gain from 1 to 95 per cent, while thirty-two show a loss from 10 to 68 per cent. Building construction is generally considered the most sensitive of all financial undertakings, hence this decline may be taken as the most serious retrenchment in any industrial line. Plans in great numbers are ready and waiting for a subsidence of the financial "flurry," when it is confidently expected that building will assume its normal course. Among the cities that scored an increase are: Birmingham, 9 per cent; Buffalo, 50; Cleveland, 8; Cincinnati, 32; Detroit, 95; Milwaukee, 29; Minneapolis, 12; Mobile, 31; Omaha, 10; St. Paul, 16; Scranton, 38; South Bend, 18. The principal losers were: Chicago, 52; Duluth, 58; Evansville, 81; Harrisburg, 64; Hartford, 65; Indianapolis, 62; Louisville, 65; St. Louis, 66; Trenton, 58, and Washington, 68.

## ACCIDENTS, DAMAGES AND LOSSES

Three firemen were pinned under the burning roof of the storage yard of the Hydraulic Press Brick Co., St. Louis, Mo., and badly burned and injured.

T. M. Hess is suing Jacob Rich and Frank Riddle to recover \$12,000, the value of 120 shares of capital stock of the Millville (N. J.) Brick Mfg. Co.

The schedules of the bankruptcy of Kohl-Hepp Brick Co., 439 Fifth Av., New York and plant at Sayreville, N. J., show liabilities \$135,045 and assets \$220,522.

The Montello Brick Works, Reading, Pa., was adjudicated a bankrupt Dec. 10th in the U. S. Court at Philadelphia, upon motion of an attorney for creditors.

The sheriff will sell a portion of the personal property of the Fitzgerald Brick Co., Coxsack, N. Y., to satisfy a judgment of W. R. Church and Joseph Borono, amounting to \$300.

Peter G. Van Zandt, treasurer of the Independent Brick Co., Trenton, N. J., was found unconscious in his apartments as a result of a fall while on a business trip to New York.

A petition to have adjudicated as bankrupt the American Pottery Supply Co., Baltimore, Md., of which a receiver was appointed in September, was filed in the U. S. District court.

Charles A. Carey, father of a boy that was killed at the plant of the Utica (Ill.) Fire Brick Co.'s plant last summer, has begun suit asking for \$10,000 damages for the death of his child.

A jury has returned a verdict in which Jeff Bannon, Louisville, Ky., is required to surrender to the estate of his father, Patrick Bannon, Sr., \$60,000 of stock in the P. Bannon Sewer Pipe Co. and the Kentucky Vitrified Brick Co. The suit was brought by the other children.

Andrew J. Peterman of Fredericksburg, O., and E. R. Hammond of Pittsburg, Pa., have been appointed receivers of the Fredericksburg (O.) Brick, Coal & Clay Co. The plant was completed three years ago but was never operated owing to disputes between the manager and promoters.

## BRICK PLANTS WILL RUN ALL WINTER

The Coffeyville (Kan.), Vitrified Brick and Tile Company has sold over 1,250,000 brick in the last few days. From the way recent orders have come in the company will probably be able to keep the plant in operation all winter.

All business is being conducted on a strictly cash basis. The company's chief trouble in the past has been to dispose of the bonds received from the various cities to which paving brick were furnished. During the last few days the company has disposed of six per cent paving bonds.

Small orders are coming in again and the company believes that whereas it looked as if it might be necessary to shut down for the winter a week or two ago, it now looks as if the company will be able to operate its plant all winter. The increase in orders also speaks well for the financial condition of the cities in this section of the west, and means that many men who had feared a lay-off, will be given employment.

## CALENDARS FOR NINETEEN EIGHT

The 1908 Kalender of the Tonindustrue Zeitung of Berlin, Germany, has made its timely arrival and like the many former years is really a booklet in three parts. It is by far one of the most desired that comes into the office of the CLAY RECORD.

R. M. & W. H. Wiles Company, Grassy Point, N. Y., are on hand as usual with their art calendar. This year it is from the celebrated painting by Waugh, "The Little Pig Went to Market." It is highly colored and is on ornament to any house or office.

E. M. Freese & Company, Gallon, Ohio, are as usual sending out a calendar that is very attractive. It is quite different from those sent out in the previous years, but is just as much sought for and is very handsome.

## THINKS COMPANIES SHOULD BE SEPARATE

"What do you think of the plans discussed for the reorganization of the Montello group of securities?" was the question asked of Albert A. Gery, president of the U. S. Brick Company, Reading, Pa., and heavily interested in the three companies.

Mr. Gery replied as follows:

"I have always thought and still advocate the separation of the Montello Brick Works and the Montello Brick Company. As a stockholder in the latter I would not consent to put my interest into a new company in which all holdings were to be rated alike, as it would greatly depreciate the value of such holdings.

"The proper thing to do in my opinion is the permanent separation of these interests. Let the Montello Brick Works take the Oaks plant, paying enough for the property to permit the Montello Brick Company to put into operation the plants which it owns at Wyomissing and Montello. This would be fair to every interest and would leave the Montello Brick Works to develop a proposition in which every dollar can be worked out. The plant is a model in every way, was run for months as a big money maker and this record can be repeated if proper attention is given to it. I favor a division which would result in making two companies successful manufacturers of brick, and save a lot of money for the holders of both securities."

## MORE THAN LIKELY BRICKMAKING WILL BECOME A PERMANENT FEATURE

The manufacture of brick at the Prairie View (Texas) State Normal and Industrial College, which constitutes a new department of practical instruction for the students recently added to the institution, may now be said to have emerged from the experimental stage, the innovation having only been introduced on trial, and it is more than likely that it will become a permanent feature in the school. During the week just closing 50,000 brick were molded, notwithstanding the adverse weather condition, which interfered considerably with the work, and within a fortnight it is planned to burn the first kiln, when the success or impracticability of the enterprise will be established to a certainty. Samples of the college output are commented favorably on by those conversant with brick making, and specimens have stood splendidly the test of burning.

## A PAVING BRICK COMPANY INSURES ITS WORKMEN

The following announcement by the Streator Paving Brick Company, Streator, Ill., just made public, is a policy which might well be followed by other corporations employing large numbers of men. This company has in years past made a practice of presenting each employe with a Christmas turkey, but it feels that it better provides for dependent families by contributing a paid-up accident policy, and does so at even greater expense. Following are the contents of a circular explaining the conditions:

Hitherto the insurance carried by this company against accidents has been in the form of protection against legal liability from any damage that might accrue as the result of an accident in its works. In addition to this we have now taken out a collective accident policy which insures all of our employes against accidents while regularly employed, and which will compensate them in the event of any disabling injury. The scale of benefits is as follows:

1. In the event of death within ninety days, one year's wages, not exceeding \$1,500.
2. For the loss of two limbs or two eyes, a sum equal to the amount payable under the policy at death.
3. For the loss of one limb, a sum equal to one-third of the amount payable under the policy at death.
4. For the loss of one eye, a sum equal to one-eighth of the amount payable under the policy at death, not exceeding \$200.
5. In the event of temporary disability, one-half the weekly wages for a period of not exceeding 26 weeks, such sum not to exceed \$500.
6. For such medical attendance as may be required on account of such accidents as are covered by this insurance.

## TESTS OF REINFORCED CONCRETE BEAMS

Bulletin No. 14, Tests of Reinforced Concrete Beams, series of 1906, has just been issued by the University of Illinois Engineering Experiment Station. The tests described are a continuation of the tests discussed in Bulletin No. 4. The topics investigated include the effect of quality of concrete upon the strength of beams, the effect of repetitive loading upon the action of beams, and the resistance of beams to diagonal tension failures. The results of the investigation of diagonal tension failures throw light upon the amount of the vertical stress which may be allowed in reinforced concrete beams not having metallic web reinforcement. The resistance of beams to diagonal tension may be the controlling feature of relatively short beams, and as such failures occur suddenly and without much warning, a knowledge of the resistance of the concrete is essential. Some beams gave surprisingly low values and it seems evident that the values allowed by many city building ordinances are higher than should be recommended. The tests of concrete columns and reinforced concrete columns and of reinforced concrete T-beams for 1906 have already been published.

L. P. Breckenridge, Director Engineering Experiment Station.

Urbana, Ill., Dec. 14, 1907.

## TWENTY-TWO MEN HURT BY AIR TANK EXPLOSION

Two men were probably mortally injured and twenty others suffered bruises when a big compressed air tank exploded in the Staten Island terra cotta works at Tottenville.

Michael Gaul, of Kreischerville, sustained a fracture of the skull, fractures of three ribs and internal injuries. William Gibbs, of Tottenville, was hurt about the legs and he is probably injured internally.

The explosion occurred about 8 o'clock. Most of the residents of Tottenville were in bed at that hour, it being a bleak, slow night on the island. Five minutes after the roar that shook the district took place Main street looked even livelier than it does in the daytime. The residents thought an earthquake had visited their town.

Just what caused the big tank to explode is not known, but presumably some defect in the piping led to the blow-out. The twenty men beside Gaul and Gibbs who were hurt were flung off their feet and cut by flying glass and pieces of wood and brick.

Soon the two-story building was in flames. The Tottenville fire department fought hard to save the structure, but their efforts were futile. This morning the building is simply a mass of tangled, smoking debris.

## BRICK GO DOWN TO THE PRICE OF FIVE YEARS AGO

Prices of good brick are down to the level of five years ago, when the cost of manufacturing and handling was much lower than it is today. It cost close to \$5 per thousand to put brick in New York five years ago, and since then a number of strikes by laborers at the yards, boatmen and by handlers in the city have raised that level so that manufacturers and dealers are worse off than when quotations were formerly at the low figures. The opportunity presented to builders and those who can use brick would be extremely exceptional if it were not for the currency difficulties—so often here spoken of in the last seventeen months that nothing can be added to the score.

Sales are averaging about fifty cargoes weekly, but deliveries are slow on the part of dealers, so that the barges are longer unloading than ordinarily. The slow circulation of currency is thus reflected in the slower movements of the boats between the market and the works.

## MR. DREW GOES TO GEORGIA

Mr. George Drew, of Chicago, Ill., arrived in Columbus, Ga., the 9th, to take charge of the manufacturing department of the Muscogee Brick & Terra Cotta Co. As a manufacturer Mr. Drew stands second to none, having had experience for twenty-five years in some of the largest plants in the United States.

The Muscogee Brick & Terra Cotta Co. have one of the best equipped and up to date plants in the southern states, and 100 acres of first-class brick-clay, enough to last 50 or 75 years. With the improved methods of this plant it is possible to run every day during the year.

Mr. John T. Fletcher, president of the company, says that the company will have a capacity of over thirty million brick each year, and they can supply enough first-class brick to build a city.

## FANCY POTTERY WILL COST MORE AFTER JANUARY FIRST

All specialty pottery ware will be increased 5 per cent after January 1. This was decided upon by representatives of sixty pottery concerns at a meeting held in Pittsburgh, Pa. The manufacturers declared that owing to the increased cost of labor the advance was necessary. The makers of general ware declared that it would be inadvisable to raise the price on such ware and agreed to maintain the present list for the coming years.

The specialties include fancy vases, bric-a-brac, novelties in fruit dishes and other special shapes in table ware.

T. A. McNichol, of East Liverpool, O., presided, and Charles Ashbaugh of Wheeling acted as secretary. The executive committee gave out a statement calling attention to the fact that the increase was made on luxuries only and did not affect the staples.

Trenton and Baltimore manufacturers were largely represented, though the Ohio companies controlled the meeting.

The Trenton potteries were represented by the following men: A. G. Dale of the International Pottery Company; Charles Howell Cook of the Cook Potteries Company; Daniel Willets of the Willets Pottery Company; John M. Pope of the Mercer Pottery Company and John E. Norris of the Anchor Pottery Company.

## AKRON FIRMS' NEW SHIPPING ARRANGEMENT

A number of large shipping concerns in Akron, O., including the Robinson Clay Product Company, the Taplin-Rice and the B. F. Goodrich Company and the Diamond Rubber Company have joined in a movement toward the organization of the Ohio Shippers' association for the purpose of influencing legislation and rulings of the state and interstate commissions to bring about more favorable conditions for shippers. The organization is a large one and has been promoted by an agent from Columbus, who has visited other cities of the state, as well as Akron, to get subscriptions.

The movement has already brought about an appeal to the state railway commission for the betterment of car service rules, which were promulgated by the commission last May. The idea of the association, as it is understood, is also to bring pressure on the interstate commerce commission.

## CONTRACTORS MUST TAKE UP BRICK PAVEMENTS

Three city blocks of paved street have been ordered torn up by Director Andrix of the Columbus, O., service board because of the character of the material with which the street has been laid. The contractor affected by this order is W. J. Burns and the partly paved street which is ordered torn up is Fulton street, for the construction of which Burns has the contract.

According to the statement of Director Andrix made at the meeting of the service board, he pulled one row of brick out of the street and found all but about nine of them chipped and otherwise badly handled. Mr. Carlisle, of the Carlisle Clay Brick Company, appeared before the board and talked against the order of Mr. Andrix. He offered to furnish a guarantee bond that the street would outlast its time limit.

## CLAY RECORD.

### CLOSE BRICK PLANT FOR LACK OF COAL

As a result of inability to secure fuel and the uncertainty of securing it regularly in the future, the Barber Asphalt Company closed its big plant in South Des Moines, Ia. for an indefinite period. Ninety-six men were thrown out of employment. Paul Beers, manager of the plant, said that he did not believe the plant would be reopened until spring.

"The closing of the plant is entirely due to the strike of the coal miners," said Mr. Beers. "We had lots of orders for brick and expected to run all winter. We ran short of fuel, although our contract with the Norwood White Coal Company provided that we were to be furnished coal regularly all winter. The company officials stated that they had been assured the miners would resume work and that fuel would be furnished at once. No fuel came, the company telephoning late in the day that it was uncertain whether they could fill the order and that there was liable to be uncertainty even after that.

"The whole thing simmers down to the unreasonable demands of the coal miners in the Des Moines district. If they had accepted one-half clearing house certificates everything would have been all right. Now they have forced us to close down, throwing innocent men out of employment. I presume there are other plants in the same boat that we are in. Eventually it will hit the miners and they will get a good dose of their own medicine."

### SUPREME COURT OF MICHIGAN DECIDES THAT CITY OF DETROIT CANNOT MAKE ITS OWN BRICK

The supreme court has handed down a decision that the city of Detroit cannot operate a municipal brick plant. Two years ago the Detroit council appropriated \$50,000 to establish a municipal paving brick plant. A contract for a plant was let to Frank Reich for \$45,000, and work was started. Local brick men attacked the city's right to manufacture brick under the constitutional provision which prohibits municipalities from engaging in works of internal improvement.

### THE TREATMENT OF BELTS AND ROPES

The above title is that of an eighty-eight page booklet which has been published by the Cling-Surface Company, of Buffalo, N. Y. It states that Cling-Surface is a belt food, and is put on belts to get special results. It makes and keeps the belt mellow, pliable and durable and makes it pull and let go of the pulley.

This Cling-Surface is used by many of the large manufacturers in all branches of the trade and is used on any kind of belt. Write for a booklet and mention THE CLAY RECORD, and it will be sent by return mail.

### RETRENCHMENT IN OHIO

Several thousand employees of sewer pipe plants in the northern part of Ohio valley have agreed to accept a reduction of 20 cents per diem on the scale of wages paid. It is understood, however, that as soon as the conditions existing in the sewer pipe trade improve the various firms will resume the payment of the present scale of wages. This is expected to come before April 1, 1908.

### LEADING ARCHITECTS TRYING TO CREATE MORE ARTISTIC APPEARANCE IN CITY

A concerted effort is being made by the leading architects of Washington to create a more artistic effort in the general appearance of the city by specifying in plans the use of brick and stone in harmonious colors, and to frown down attempts to use materials whose tendency is to destroy the art effect in the locality in which the building is to be located. Many years ago it was considered the correct thing to hide the brick walls of a building by an application of stucco to the exterior and drawing lines in the stucco while wet to imitate stone or other material. These structures when completed appeared to be constructed of oblong blocks of stone which illusion remorseless time has destroyed. It is said that one of the qualities which made the application of stucco to brick walls popular was that it was capable of producing better effects than the crudely burnt brick of an earlier period.

This is no longer the case, for such changes have taken place in brickmaking and such a variety of clays are used that some of the best architectural effects are produced in that material. Two of the houses designed by Richardson and built in Washington are built of brick. A more recent specimen of domestic architecture is built entirely of brick, and while to the casual glance it may appear to be merely the ordinary kind, yet such is not the case, as it comes from a clay bank that has its distinctive shade of color. The entire output of that brick is used by the architects but is not so much used in the larger of houses for their clients.

### MARLBOROUGH TO BE SOLD

The passing of the project to make a big cement plant at Marlborough, Lake County, Mich., was marked when Judge Swan, sitting in the federal court here, rendered a decree of foreclosure in the suit of the Union Trust Company of Detroit against the Great Northern Portland Cement Company at Baldwin, for \$657,781.75. The mortgage was given in 1904 and was for \$600,000.

The village of Marlborough was erected and the cement plant installed, only to be abandoned when it was found that the plant would not produce cement on a paying basis. The town of Marlborough and the cement manufacturing, together with the property on which Marlborough lake is situated, represents the entire assets of the company, and are liable to sale under the decree to satisfy the indebtedness.

### MANUFACTURERS ARRANGE FOR TEST TO STOP ALLEGED DISCRIMINATION

The National Association of Manufacturers of Sand Lime Products has elected H. O. Duerr, Wilmington, Del., president; S. H. Smith, Wilmington, N. C., vice-president; Fred K. Irwin, Chicago, secretary, and N. E. Plumer, Buffalo, treasurer.

The insurance question has been adjusted temporarily by an arrangement for a test of sand, lime, brick and other building material before a committee of underwriters who now, it is said, discriminate against the sand lime products in making rates.

## SAND OR LIME BRICK OR BLOCK NEWS

The Atlas Cement Brick Machinery Co., Detroit, Mich., has been incorporated with \$10,000 capital stock.

C. I. Clemens and Ben Norton, Rochester, Ind. will establish a concrete block and brick plant at Dalton, Ga.

The Portland Cement Brick Co., Portland, Oregon, has been incorporated with \$50,000 capital stock by L. D. Potter, E. J. Haynes and George W. Wilson.

The Gary (Ind.) Brick & Stone Co. has been launched with \$75,000 capital stock. They will manufacture building brick from sand and lime. George Baker and Capt. Hodson are interested.

Furman & Odiarne, Rockingham, N. C., have put up a concrete brick and block manufacturing plant. C. M. Furman, Jr., is the manager.

The Cement Machinery Co., Jackson, Mich., changed hands Dec. 1st, W. F. Cowham selling same to Sid L. Wiltse and J. C. Lautenstager.

M. H. Averam, an electrical engineer of New York City, is at the head of a company to organize the Aleco Stone & Brick Co., to build a plant at Tampa, Fla.

The Wilkesbarre (Pa.) Cement Brick Co. will remodel the old ice house on Jackson street so that they can be manufacturing cement brick by the middle of January.

The Chicago (Ill.) Concrete Block & Brick Company has been incorporated with \$5,000 capital stock. Incorporators are M. Schmidt, A. Breckler and M. Schreck.

The Saginaw Sandstone Brick Co., Saginaw, Mich., has closed its plant for the winter and will open as early as possible in the spring. Its sales have been 4,000,000 brick.

The New River Sandstone Brick Co., Roanoke, Va., has been incorporated with \$44,500 capital stock with G. A. Shiry of Bluefield, president, and R. E. Baldwin general manager.

The Peninsular Cement Stone & Construction Co., Jackson, Mich., will soon be organized to make concrete blocks, brick, etc. Sid L. Wiltse and J. C. Lautenstager are the owners.

The Nelson Cement Works, Nelson, B. C., has been capitalized at \$25,000 and will manufacture cement blocks and bricks. C. W. Bourke and W. F. Mondelay, the gentlemen interested, have purchased a site.

The Progress Brick Co., Schenectady, N. Y., have elected the following directors: Paul Schmidt, F. W. B. Schoradt, Joseph Gritzbach, Frederick Diemer, Chas. F. Berni, Chas. Roberts, Henry Nicklas and Conrad Baumgartner.

The 1908 officers of the National Association of Manufacturers of Sand Lime Products are President, H. O. Duerr, of Wilmington, Del.; vice-president, F. H. Smith, of Wilmington, N. C.; secretary, F. K. Irvine, of Chicago, Ill. and W. E. Plummer, of Buffalo, N. Y. treasurer.

Mr. Wm F. Stimmel, Kutztown, Pa., is installing at the present time the improved "Martin" patented rack pipe steam brick dryer system of 18,000 daily capacity, including the "Martin" automatic cable delivery system, this being installed by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

## POTTERY NEWS ITEMS

A company will be organized to continue operation of the Huntington (W. Va.) China Co.'s plant. H. R. Wylie is in charge at present.

The Bell Pottery Co.'s plant at Columbus, O., was offered for sale by a master of the court and had no bidders. The property is valued at \$200,000.

The Columbus (O.) Pottery Co. at Chaseland, is preparing for an increased output the coming year and is building new kilns which will add to the capacity.

The Wood Pottery Co., North Augusta, Ia., of which P. Wood was at the head, has been sold to James P. Armstrong who represents a company that will reorganize the business.

The Phoenix Pottery Co., Mannington, W. Va., will build a \$75,000 to \$100,000 plant to manufacture table and toilet ware. George W. Bowers, of Wheeling, is organizing the company.

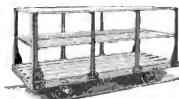
The Augusta (Ga.) China Co. has been granted a charter with \$20,000 capital stock. The directors are E. W. Herman, Abram Levy, E. F. Verdery, P. H. Roca, A. S. Hatch and J. L. Hunter.

Rapid progress is being made in constructing the new plant of the Van Briggie Pottery at Colorado Springs, Colo. F. H. Riddle says that they expect to have four kilns working at full capacity within six weeks.

The Ford City (Pa.) Pottery Co., which has been sold to the Cook Pottery Co., of Trenton, N. J., has started operations. The Cook interests also operate the Pennsylvania China Co.'s plant at Kittanning, Pa.

## The Lightest Running Dryer Car Made

having a dust proof roller bearing  
box made of steel. No oil needed.  
Write for description and prices



**Vulcan Iron Works** MASON CITY, IOWA

## MISCELLANEOUS ITEMS

A brick yard is to be started at Richardton, N. Dak., in the spring.

Vinita (Okla.) Brick Work's new plant is now in operation making about 40,000 brick daily.

James Logan, of Houston, Texas, contemplates putting in a large brick works at Tomball, Texas.

The Goldsmith Ceramic Machine Co., Hamilton, O., changed its name to the Ceramic Machinery Company.

The Flint Brick & Coal Co., Des Moines, Ia., captured \$30,000 worth of brick paving contracts this month in Des Moines.

H. H. Peterson, Holtville, Cal., is having such a demand for building material that he has increased the capacity of the plant.

The Harland & Kuester Brick Works, at Ft. Perre, S. Dak., has commenced operations with a daily output of 50,000 brick.

The Byessville (Ohio) Sewer Pipe Works, to be built by Willis Morris, is now under way and will be pushed to rapid completion.

At the fire brick works at Phillipsburg, Pa., the Harbison-Walker Refractories Co. have cut out Saturdays and now work but five days a week.

Surveyors are at work laying out the plant at Glen Easton, W. Va., for a brick manufacturing plant to be built by the owners of the Glen Easton Coal Co.

The Massillon (O.) Stone & Brick Co., shut down for a week to make necessary repairs so that they could run all winter in order to catch up with orders.

The Barbee Asphalt Co., Des Moines, Ia., has closed down their plant on account of the coal miner's strike and they not being able to get coal to burn the brick.

Coffeyville, Kansas, and Catskill, N. Y., are both furnishing Houston, Texas, with vitrified paving brick and blocks. A contract for paving approximating \$165,000 has been let.

All the machinery for the new brick works for W. W. Ellis & Son, Canton, Ill., has arrived and is being set into place. The manufacture of paving brick will be started in the spring.

The Bickford Fire Brick Co., Lock Haven, Pa., have bought the Curwensville (Pa.) Fire Brick Co.'s plant at trustee's sale and will have title to same and operate it within two weeks.

The present plant of the Gay Head Fire Brick Co., Somerset, Mass., is to be pulled down and new buildings to be erected after modern plans, suitable for the manufacture of all kinds of fire brick.

The Marshalltown (Iowa) Pottery Co.'s plant is to be turned into an enameled brick plant. J. F. Martin, the old superintendent, will have charge of the new company. Kansas City people are interested.

Mr. Wm. Kelley of the Frankford Brick Works, Philadelphia, Pa., has just installed on his plant the "Martin" improved Style "A" steam power brick machine in combination with the horizontal pug mill, etc., which are being installed by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

George H. Polk, Scooba, Miss., is in the market for brick machinery.

Warden K. Lowden has registered the Utica Shale Brick and Pipe Co., St. Lambert, Quebec.

The Arkansas Fuller's Earth Co., Little Rock, Ark., is in the market for a dryer to dry their clay.

A clay deposit has been found in Woodbine, N. J., and is being utilized for the improvement of streets and grading purposes.

B. M. Hungerford, Aitkin, Minn., has had samples of clay tested by an authority, and will manufacture brick at Aitkin in the spring.

A. B. Roberts, receiver for the Montello Brick Works, Reading, Pa., closed down the Perkiomen plant the 10th inst. for the winter.

On account of a cancellation of a large order the plant of the Grand Ledge (Mich.) Clay Products Co. has been closed for the winter.

The Black Hawk Clay Mfg. Co., at Sears, Ills., are daily sending out pressed brick to Iowa and Illinois points and report the business good for this time of the year.

R. R. McArthur, of Brantford, Ontario, will represent the American Clay Machinery Co., Bucyrus, Ohio, in Canada, making the Kings Hotel, Toronto, his headquarters.

The Diamond Fire Brick Co., Canon City, Colo., at a recent meeting, voted to increase the capital of the company from \$60,000 to \$150,000, and to improve and enlarge the plant.

W. F. Martin, of Cynthia, Ind., has sold his interest in the Edwards Brick and Sewer Pipe Co. at Albion, Ills., to his partner, George C. Zeigler, and will soon open a yard at Mt. Carmel.

The Sheridan (Wyoming) Press Brick & Tile Company has completed plans for an addition to its plant which will double the capacity. New buildings will be erected, and machinery installed ready for operation in the spring. Building in the city has been hindered on account of shortage of brick.

The Western Clay Products Co., Salt Lake City, Utah, has filed articles of incorporation with \$25,000 capital stock. The officers are: George Curley, president; Andrew A. Cahoon, vice-president; Wm. S. Remmey, treasurer; Alice Curley, secretary, and the above and John P. Cahoon and John A. Spiker are the directors.

## THE ANTON VOGT DOWN DRAFT KILN

For Sewer Pipe, Drain Tile, all kinds of Brick and hollow Building Material. Cheap and simple. Don't fail to investigate this Kiln, it delivers the goods. To purchasers of Plans and explicit instructions of how to build, set and burn Kiln my bureau of valuable practical information is **FREE**

ANTON VOGT, Ada, Okla., U. S. A.

The Whitehall (Ills.) Sewer Pipe & Stoneware Co. is figuring on the furnishing of light to Winchester, the same as it does to Greenfield.

The Mohawk Valley Brick & Supply Co., Utica, N. Y., will increase its capital stock from \$15,000 to \$25,000, and the number of directors from three to five.

The Aberdeen (S. Dak.) Brick Co. will be reorganized. A committee has been appointed for that purpose consisting of C. N. Harris, C. F. Easton and S. C. Hedger.

The Fort Pierre (S. Dak.) Brick Co. started their plant the 9th inst., making 50,000 brick daily from gumbo. The plant is an up to date one in every particular.

The Shawnee (O.) Flash Brick Co. has suspended operation on its plant for the winter and it is expected the Iron Clay plant on Rock Run will close down in a few days.

The Billings (Mont.) Pressed Brick & Tile Co. will soon start their plant in operation, the machinery all having been installed. Frank H. Church is president of the company.

The General Ceramic Mfg. Co., South Berwick, N. J., has been incorporated with \$25,000 capital stock to make brick, etc. William Thompson is president and treasurer.

The Coffeyville (Kan.) Vitrified Brick Co. announced that during December its five plants will be run on half time and the men will be cut 10 per cent in wages. The company runs day and night forces three days a week.

Charles Wilson, of Mason City, Ia., has been engaged as manager of the Sheffield (Ia.) Brick & Tile Co., and has assumed his duties. The company will put in an electric lighting plant for the works and to sell electric juice to the town.

C. J. Franklin has resigned his position as manager of the Boise (Idaho) Vitrified Brick Works, and will devote his time to civil engineering.

The Cook Brick & Tile Co., Ithaca, N. Y., has been incorporated with \$20,000 capital stock. Incorporators are: George W. Cook, Charles H. Chapman and Loren J. Cook.

The Ashton Fire Brick & Tile Co. has sold its works to the Western Clay Products Co., Salt Lake City, Utah, for the consideration of \$45,000. The plant is at Third West and Eighth South streets.

During the month of November articles of incorporation were filed at Dover, Del., for the American Brick and Cement Co., American Coalin Co., and the Wilkesbarre Cement Brick Co. All capitalized at \$100,000 or over.

The Mount Olive (Ills.) Brick & Tile Co. has been incorporated with \$8000 capital stock to manufacture brick and tile. Incorporators are: C. Weidler, T. H. Koch and C. Clavin. They will enlarge and operate the Weidler plant.

D. C. Richardson-Taylor Lumber Co., Shreveport, La., will establish at Mooringsport a plant for the manufacture of face brick, daily capacity 50,000. Gas from their own wells will be used to burn them. R. H. West is in charge of the construction.

The West Coast Portland Cement Co., Lewistown, Idaho, has started a force of workmen on the Upper Snake river to make the necessary excavations for the installation of a cement plant of 100-barrel daily capacity. Machinery is arriving and will be installed ready for spring. J. M. Edwards is the manager of the company.

## the GILLETT DOORLESS Hot Air FIREBOX For Kilns Blast

Patent No. 792,769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

A. GILLETTE & CO.

Factory, St. Louis, Mo.

ALEDO, ILL.

## DIRECT HEAT

# DRYERS

FOR

BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,

62-64 William St.

NEW YORK CITY



## CLAY RECORD.

## DUMP CARS FOR SALE

A few good, "Main Line" Dump Cars. Will be put in A-1 condition. Write for description. Detroit Car Building and Equipment Co. Detroit, Mich.

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete or in part. Cheap. Have several Brewster Mills for sale and others. Regulators, Rollers, Crushers, Drying Pipes, etc. If you wish to buy or sell write to:

Brick and Tile Machinery  
Secor Ill.

## FOR SALE

One power Regress. In number one condition, used only but a short time, capacity 18000 per day. Ask for full particulars.

American Krammet Brick & Tile Co. New York  
1 Madison Ave.

## NOTICE

To American Clay Machinery Manufacturers—A sound proposition for N. W. Alberta, Can. Articles of Association have been signed for Eason's Brick & Tile Co., Ltd., for \$2000 of 240 shares at \$10 each at par. To equip a complete brick plant on field of 60 acres proved at 40 feet and analyzed by the Henry Martin Brick Machine Co. of Pa. U. S. A. whose tests are satisfactory for a good sound brick.

The situation of the field is close to the Railway siding of Claymore, on the C. N. R. 6 miles from Vermilion City. The business in the famous Saskatchewan Valley and the Vermilion district, where brick are now selling at \$20 per thousand and in great demand at this.

We desire to correspond at once with any firm who will put a fully equipped up-to-date plant on the field on an acceptance backed by fully paid up stock who may recommend a capable manager to engage himself with our company if salary agree upon. Address:

ALEXANDER EASON  
Pioneer Builder and Contractor  
Vermilion, Alta.

Solicitor  
K. V. Fieldhouse, Esq., L. T. B.  
Vermilion, Alta.

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 25 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 1500 to 10000 per hour. Greatest bargain. Write for particulars. GREAT EASTERN CLAY CO.  
29 Cortland St., New York

## BRICK PLANT WANTED AT JACKSONVILLE

One of the best places in the whole country to establish a small up-to-date, modern Brick Plant. Local consumption 300,000 annually. Abundance of good clay. No competition. Will give detailed information upon application to the:

BUSINESS MEN'S ASSOCIATION  
Jacksonville, Illinois

## POSITION WANTED

I have had twenty-two years' experience in fire clays, brick, hollow brick, building tile, refractories and settings. Understand making magnesite and silica brick. Want position as superintendent.

W. T. J., care Clay Record, Chicago, Ill.

## POSITION WANTED

Young man desires a position as Superintendent or sales manager, understanding stiff mud and dry press process. Has traveled all over.

THAYER, care Clay Record, Chicago, Ill.

## FOR SALE

One No. 2 Putta & Co. Clay Disintegrator. Used only a short time. Address:  
C. SOLFUSHER & SONS  
Aurora, Illinois

## WANTED

12 offices covering entire brick, clay and building material field. Positions open for office, sales and technical men. Service confidential. Write, stating age, experience and location desired.

HAPPELTON  
38 Broadway, New York City, or  
100 Harrison Bldg., Chicago, Ill.

## BRICK YARD FOR SALE

Old established yard in good town of 8,000 people, with good country surrounding. 45 acres good kilns and sheds. Good reason for selling. Call on Mr. address:

CHARLES MCNEAL  
Maryville, Mo.

## FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.  
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails. 12, 16, 20 and 24 pound. For prices address:  
ATLAS CAR & MFG. CO.,  
Cleveland, Ohio.

## FOR SALE.

Brick manufacturing plant capacity 40000 Six mould dry press, small piling mill and lumber yard. Good shipping territory and an established paying business. Address:

J. J. CARR OF CLAY RECORD  
Chicago, Illinois

## PLANT FOR SALE

A practically new brick and tile plant in north west Missouri for sale on account of health have decided to sell at about one-fourth cost. Soil mud and stiff mud machinery engine boilers and sheds for 80000 brick daily. Two clamp kilns and Stewart kilns. Plant runs steadily and can't supply the demand at good prices.

Write to J. WYNN  
Weldon, Iowa

## WANTED

A thoroughly competent and reliable Superintendent to manage a stiff mud brick plant at Columbia, Mo. Capacity 25,000 a day, output principally sawdust.

Must have A1 references, no other need apply. Address or reply in person:  
EDWARD H. BRICK CO.,  
Columbia, Mo.

## PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address:

DENIS, care Clay Record, Chicago, Ill.

## FOR SALE

Second-hand presses of different sizes and makes. Good machines and low price. THE FERNHOLTZ BRICK MFG. CO.,  
Old Manchester Road  
St. Louis, Mo.



## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT.  
Care Clay Record, Chicago, Ill.

## CARS WANTED

Wanted—second hand cars and trucks. Give lowest price and condition in first letter.

Box 51

Independence, Iowa

## PALLETS FOR SALE

We have a large number of second-hand wood pallets, size 34 by 10 inches. Can be bought cheap. Address:

MARTIN Lancaster, Pa.

## POSITION WANTED

Position as Superintendent or Manager of Faving Brick Plant, thoroughly competent to take charge of construction and operating in every detail. Have good position at present, but dislike location. A. references. Western plant preferred. Address:  
PAVER, care of CLAY RECORD  
Chicago, Illinois

## FOR SALE

A 9-foot American Clay Machinery Co. Plant in first-class condition. Will sell cheap to avoid moving.  
SMITH BRICK COMPANY,  
Omaha, Neb.

## ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

50 Chamber of Commerce  
Astoria, Oregon

## BRICK YARD FOR SALE

Owing to death of owner, estate will dispose of only brick yards in railway town of 6,000 in Central Illinois. Thirteen acres irretrievable clay and water supply. Just outside of corporate limits, on main road, mud and adjoining Railroad yards. Will sell cheap.

Address G. E. B., care Clay Record, Chicago, Ill.

## SHALE CLAY FOR SALE

Have bed of red, chocolate and blue shales exposed full length of 3,500-foot railway cut and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow block, brick, paving block, tile, sewer pipe. On river. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Union Railway Co.  
Des Moines, Iowa.



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Single Copies, 10 Cents

**REPORT OF THE COMMITTEE ON TECHNICAL SCHOOLS AT MEETING OF CANADIAN CLAY PRODUCTS MANUFACTURERS**

By W. McCREDIE AND S. J. FOX.

"Some three years ago, at Waterloo, the question of technical education was brought up at our convention. The convention seemed to be interested in the question and expressed that interest by appointing a committee. And, fortunately or unfortunately, I was made chairman of that committee. We have been pursuing our duties as best we know how from that time to the present. This is a very important question as any one who has attended these conventions from time to time since then will know. The present convention seems more particularly to demonstrate the fact that we want more technical knowledge. This is a serious question, also because of the fact that it is a huge problem to introduce and bring into effect any proposed change of this kind. While your Committee has not succeeded as it would have wished to do, yet we are not in any manner discouraged with our work. We think we have made some progress. We think we have been enabled to get things in shape for ultimate success. "And, perhaps, it would be as well for me to give a very brief synopsis of what we have done. I think we have reported progress at each convention from the time of our appointment until now. But since our last convention, I think we have made some material progress. Last year, at the convention, when we reported, we had not very much to report. But, meeting in the city of Toronto, at the seat of the local government, we were in a position to bring the matter more prominently before the provincial authorities. We used our best endeavors to bring the matter before the department to which it belongs; and I may say that we have met with very much encouragement as I shall endeavor to show you directly. At our convention in Toronto we had at our banquet—that memorable occasion—Hon. Mr. St. John, shortly afterwards deceased, and Hon. Dr. Pyne, the Minister of Education. On that occasion we did not lose sight of your wishes in regard to this matter, but tried to draw attention of these

gentlemen to the subject, and I think we did succeed in interesting them in the matter. Hon. Dr. Pyne, at that meeting, told us that if we would appoint a committee to confer with them they would try to help us. The result was that a committee was appointed to go to Columbus, Ohio, and there make an examination of the technical school presided over by Professor Orton, whom we all held in honor and who was with us last year. The committee named to undertake that work consisted of Professor Ellis, representing the Board of Governors of the University and the School of Practical Science, Mr. S. J. Fox to represent the government, while I had the honor of being named as the party to represent you. We went to Columbus, Ohio, and made a thorough examination of the plans there in use and the courses they were teaching. And I think I can safely say that we did very much interest Professor Ellis—which was our great object, as he was the representative of the University. I think we have him as a firm believer in the necessity of the course, and I think we can rely upon him to help us in the future in any way he can. We made our report as a Committee. It is not necessary nor would it really be in place that I should give you that report; it was for the use of the government and the Board of Governors of Toronto University. There is a problem connected with it which, no doubt, has occurred to you at once. When it is shown and admitted that this course is a necessary one and one that will help and benefit all the clay-working industries not only in this province but throughout the Dominion, the problem that faces us is the problem of ways and means. And, while we are all rich at home, I suppose, still we do not feel like establishing a fund for a great enterprise like this under our association. In order to carry on such a work it is absolutely necessary to have a good deal of means, means to bring the matter before the proper authorities, means to get the thing going, and then after all, means to provide and install the necessary equipment. Mr. Fox will follow me and will make up anything that my statement lacks. I speak from memory, and, I fear, not with such close connection with the ideas as to make sure of having everything in its place. As I have said, the great problem now is to get the means to start. I

## CLAY RECORD.

think we have fully converted the faculty of the University of Toronto and the Board of Governors. Am I not correct in that, Mr. Fox?

Mr. Fox.—I think that is quite correct.

Mr. McCREDIE. If we have not done anything more than that, we have done quite a work. We are taking means whereby we can bring this matter more prominently before the public and the proper authorities, and we want your help and co-operation. We may ask your financial aid. We have not a cent in the treasury of our Association beyond what is really necessary. In fact, in our meeting here some of the men who represent firms, very cheerfully agreed to subscribe towards a fund to carry on this work. Of course, this is hardly fair. It is not for Mr. Fox, or Mr. McCannel, or Mr. Millar, or myself, to put our hands in our pockets to help run an institution of this kind. Yet, these gentlemen are willing to do it. I think you can safely say that you have a committee that are determined to make this thing a success, and they are doing it from a sense of loyalty to the country and to the profession to which we belong. May I say "profession of brick-making"? (Hear, hear). I guess that is right. In order to further the object we have in view we have drawn up a resolution. I am very glad that we have as our secretary the publisher of a paper who will, in the future, I have no doubt, be of great help to us in this work. We drew him up to the scratch just before going to dinner, hold him our cares and troubles, put the harness on him and intimated to him that we were going to put him to work. He did not kick, and I think he will help us very materially. Now, I am going to ask you to agree to this resolution of which I have spoken. You will understand that, before the means necessary to this enterprise can be raised, there has got to be a lot of lobbying and presenting of our claims and that sort of thing—you can understand that better than I can explain it to you. I am introducing this resolution in order to secure your help. From this you will see how we are progressing:

OTTAWA, Nov. 21, 1907.

Resolution Concerning the Urgent Necessity of Technical Investigation and Teaching in the Fields of Non-Metallic Minerals.

WHEREAS—The non-metallic mineral resources of the Dominion, though vast, are at present but in a crude state of development.

WHEREAS—Any development made so far has been considerably retarded by the lack of investigation of the possibilities of such minerals and by the absence of technical knowledge necessary to their progressive manufacture.

WHEREAS—The development of the clays, shales, and marls of the Dominion of Canada is of greater importance than that of any other minerals, because of their intimate association with Canadian domestic and social needs.

WHEREAS—The establishment of individual enterprises for the utilization of these mineral deposits will result from such investigative technical effort and in the opening up of many avenues for the employment of home labor.

WHEREAS—The manufacture of such products from Canadian minerals will diminish the quantity of imported products into the Dominion.

WHEREAS—Owing to the growing scarcity and consequent increased cost of lumber, the demand for building materials made from non-metallic minerals has been largely increased.

WHEREAS—The means of supplying this demand is limited by the restricted facilities for the manufacture of such products, largely due to the sparse technical knowledge of these resources.

WHEREAS—In consequence of this lack, foreign importations of such products must necessarily largely increase to supply this demand.

WHEREAS—The Dominion of Canada possesses within its bounds all the materials necessary to meet the demands of the home market, if such technical assistance is furnished to the workers.

WHEREAS—Such technical investigation will result in the establishment of enterprises for the manufacture of building brick, face brick, paving brick and block, hollow block, fire-proofing, conduits, drain tile, sewerpipes, roofing tile, enameled brick, mosaic tile, floor tile, fire brick, retorts and kindred refractory products, pottery, art and electric porcelains, faience and decorative tiles, glass and glass wares, cements and kindred products, limes and plaster of paris, (all of which products are in growing demand),

THEREFORE BE IT RESOLVED, That the Canadian Clay Products Manufacturers in convention assembled at Ottawa, urge upon the Dominion and Provincial Governments the immediate necessity of an appropriation of sufficient magnitude for the successful establishment of a technical department and school by means of which technical investigations may be made along the lines outlined above and the knowledge thus obtained imparted to the workers in these respective fields.

Now, I have very much pleasure in moving the adoption of this resolution which, I understand, will be seconded and spoken to by Mr. Fox.

Before I resume by seat there is one matter which occurred to me while I was reading the resolution and which I would like to mention. I knew we had felspar somewhere in the surrounding country, and I had learned that we had kalion somewhere in the west. I was agreeably surprised last night at the banquet to hear one of the speakers make the statement that felspar was to be had right here at Ottawa. These two things, felspar and kalion are the materials that go to make the body of these finer wares. It does seem a pity that, when we have the brains, the hands and the material to make these wares we should lack the "know how" to do it. But we have not any one to teach us. When we were on our trip over to Columbus, we took Professor Ellis to the encaustic tile works at Zanesville. And yesterday as some of us went about the Parliament Buildings here I have no doubt that we were walking on some of this material imported from Zanesville. In these works they employ 700 hands. Would it not be grand if we could have at Ottawa or Toronto such an institution. Since coming to this convention I have been told by Mr. DeJoannis and some of the other men from the other side, that they have nearly doubled the workmen in that institution since last spring. This is a great illustration of what can be done and so I

urge your co-operation and help so that we can help to develop our Canadian industries in this direction.

Mr. Fox. After the able speech you have heard from Mr. McCredie, it is not necessary for me to speak at great length. He has outlined the courses that has been followed, and I am glad to be able to say that we have made some progress. Last year, at the banquet, I think we did convert Hon. Dr. Pyne to the necessity of having something done in this way. We so completely satisfied him that the government of which he is a member were ready to pay the expense of three of us on this trip of which Mr. McCredie has spoken. I can assure you that we all enjoyed the trip—not from the fact that our expenses were paid but from the knowledge we gained. Mr. McCredie has spoken about felspar. You do not have to go far from Ottawa to find that bed of felspar the best on the North American continent. It is in the township of Bedford, in the county of Frontenac, just back of Kingston. From that bed they are shipping felspar as far as St. Louis. It is an old saying that you must go from home to learn news. Professor Orton told us that this felspar is shipped from Canada to St. Louis, where it is ground and distributed. And in Toronto we find this same material in manufactured form brought back by the railroad and distributed to the Canadian trade. This should not be so, because there is a large amount of freight being paid in carrying it out and bringing it back—to say nothing about the duties. As to kalion, I would like to give one of my experiences. I think it was about the year 1900 I was coming from Toronto one Friday night. On the same car was a man who had come down from Moose Jaw. He had a sample of clay which he said he wanted me to test. He had it in his grip and he went and got it and showed it to me. As soon as I got my hands on it, I said, "I think this is kalion." Some years before, my brother had been in Florida and from there he had brought back some specimens of kalion. If we have these materials in our country why should we not use them? We do not want the government money for ourselves; we want the money so that we may have schools in which the rising generation will be taught the knowledge which is necessary for the best work and be enabled to put that knowledge into their manufactured products. Our progress seems to be slow, but I think the time will come when we shall have that school. And it may not be so far in the future as we are now apt to think. We must continue to put forth our best efforts. I was not at the banquet, unfortunately, but I have heard some of the rumors of what was said there. I heard, for instance, that Mr. May, the member of the local legislature for Ottawa was converted to the belief that there should be a technical school established. Every man that we convert to that idea is going to be of assistance to our cause. When you go home, and as you move about in different parts of the Dominion talk with the local and Dominion members and talk about this cause if you have faith in it—and if you haven't don't talk. When we were on the trip of which Mr. McCredie has spoken, and after we had spent two days in going through the Ceramic School, under Professor Orton, who gave us all the information we required, I said to Professor Ellis, "Now, you have seen the theoretical part, but what I would like you to see is the practical part—I would

like you to see the goods actually being made." I asked Professor Orton if there were any good works in the vicinity. So he gave us letters of introduction to five or six different firms, brick, encaustic tile, ear pottery, chinaware and stoneware. We went to these places, and after going through the whole of them, on our return trip I said to Professor Ellis, "Well, how did you like the trip?" He said, "I would not have missed the last part of it for anything." He was overjoyed to think that he had the privilege of going over these institutions and seeing how the work was done. When he returned he joined in sending in the report to the government. That report, of course, is government property and is for the government's information. He also reported on his own behalf to the faculty of the university, and the professors approved of the course after looking into it. Then it was handed to the board of trustees and they also approved it. Then it passed on to the higher body of the university, the governors, and Professor Coleman told me when I met him some time later that it had taken him and Professor Ellis about half an hour to explain just what the ceramic course was. But when they got the information required, they also approved of the course. But the question with them was, Where is the money to come from? They said: We are already taxed to the utmost to furnish room for the existing courses. You all know the new building of the School of Practical Science in Toronto. When it was laid out it was estimated that for fifteen or twenty years they would not have to add to it. But the building was not completed before it was crowded with students. And now, inside of five years from that time they want another building as big as the one they have in order to accommodate the students who wish to attend. At the last meeting of the Legislature, the Government empowered them to borrow \$2,000,000. Practically this meant that the province guaranteed the repayment of the money, the board of governors being empowered to borrow it, and the university today is not under government control but under the control of the board of governors—it used to be more under the control of the Minister of Education and the Legislature. When Professor Coleman told me about the difficulty I said, "But the Legislature has empowered you to borrow \$2,000,000. Can't you use some of that?" "Oh," he said, "the courses already laid out will take up every dollar of it." Later on I spoke to the Minister of Education about this point and he said, "Let them spend the money they have got, and then if they can show good cause why they require more we will assist them." But this may mean four or five years' waiting. We do not want to wait too long, but would like to see this thing in operation. For that reason I have the greatest pleasure in seconding this resolution. It is not necessary for me to say anything in advocacy of it, for I think you all agree with the idea. What we are here for is to better our conditions, to have a knowledge of our own business, so that we may advance just as fast as the other trades and professions of the country are advancing. I do not think that we should lag behind, merely waiting for something to turn up, but should keep up with the march of the times and advance with the advancement of the whole country.

Resolution carried unanimously.

# LIME AND ITS PREPARATION FOR SAND-LIME BRICK MANUFACTURE \*

By S. V. PEPPEL.

Lime and its proper preparation for use in the manufacture of sand-lime brick constitute probably the most important factor in the economical production of a satisfactory building material from sand and lime. Almost any reasonably clean sand will with a good and properly prepared lime make a good brick, but not matter how good the sand, if the lime hydrate is not right you cannot have a satisfactory brick. Therefore it is very important to the manufacturer of sand brick that he not only procure the lime which has the most desirable chemical composition, but also it is very advantageous to get one which has been burned under such conditions as to make it the most sensitive to slaking, and from such sources, as near as possible, as will permit the receipt of frequent and small shipments, since a very sensitive lime will be at the same time more susceptible to air-slaking during transportation and storage, which, of course, does no damage to the brick, but reduces the efficiency of the lime in the sand-lime brick reaction in the hardening cylinder.

Limestones completely calcined at temperatures not in excess of 1,000 degrees, C. produce limes which are the most readily and completely slaked and yield a larger volume of hydrate than limes made at higher temperatures. The plasticity and bonding power of such limes is also greater than those burned at higher temperatures. High temperatures in the burning of lime make a product which is slow in slaking, with a tendency to the incompleteness of the reaction.

To the best of our knowledge there is no other industry in which the proper manufacture of lime and its subsequent preparation are so important a factor, unless it is in the sugar industry, which in the main has come to the burning of its own lime, not because they can save money but in order to get the best possible product, regardless of expense.

Observations made by the writer within the last year using a carefully standardized Fery pyrometer on five or six plants which stand for average conditions on production, indicate that most of the lime put on the market is overburned, because with the exception of one plant the temperatures used were all the way from 1,100 to 1,400 degrees C. These high temperatures are maintained in order to get greater capacity from the kilns.

At the present time anything is considered as lime that will make an appearance of slaking and give some sort of a bond in mortar. The time will come, however, when the man who makes a sensitive lime and delivers it while fresh will have the trade, and eventually there will be established standard tests and requirements on which purchases of lime will be made, just the same as is the case for many of the raw materials for use in other industries.

Sand brick manufacturers should either burn their own lime or else contract for it under definite specifications as to its condition and composition on its arrival at the plant, because when the lime is just right 7 per cent will often do the work of 10 per cent of an imperfectly burned lime or one that has been badly air-slaked or overburned. A lime with a small amount of core is more desirable for

your purposes and will go further than one that is overburned or air-slaked badly.

When certain constants for a given lime are once established much may be learned about the comparative quality of the lime from car to car by very crude tests and inexpensive apparatus, which can be operated by anyone of ordinary intelligence when properly instructed.

If a definite quantity of pure calcium oxide which has not been overburned be agitated in a definite amount of water at any given temperature, the slaking will in a definite period of time reach a maximum temperature. The amount of the increase of temperature will depend on the composition of the lime as well as on the amount of air-slaking which has taken place. The maximum temperature which can be obtained decreases with the increase of the percentage of magnesia as well as with the increase in the amount of air-slaked lime present; therefore it would be necessary to establish constants which represented the maximum heat generated for the various types of lime or for the one in use at any particular plant. The time period required to reach the maximum temperatures under standard conditions would be a guide to the burning conditions. If overburned, the slaking will be slower and more time will be required to reach a maximum temperature, and when working in a crude way with no allowances for radiation the maximum temperature will be less, due to greater losses by radiation by the extension of the time in which the hydration can be fully completed.

If testing stations or laboratories were available, the specific gravity, loss on ignition at high heats and the total impurities might be used as guides in the selection of the limes and in the control of shipments.

I am fully satisfied that the members of this association could advantageously spend considerable time, money and energy on this matter and establish a few standard requirements, and develop some simple apparatus for use at each plant so as to test each car of lime received, if you do not care to go so far as to equip yourselves sufficiently to be able to determine which of a number of limes, available at about the same cost, would be the most economical to use. The laboratories are always available for the latter, so that it is not so important as some means of control after the laboratory has shown which lime is the best and the maximum constants for that lime that can be obtained by crude tests at the plant on each car received, and done at almost no additional expense. If the lime manufacturer has a few cars condemned and thrown back on his hands and knows you are testing his product before use, he will be more careful in what he sends you.

This matter is most important because, in nearly every instance where desirable sand brick locations are found, limestone is absent, and, again, most sand-brick plants today are not large enough to consume sufficient lime to make it economical to manufacture lime for this purpose alone. A single kiln of modern type produces eight to ten tons daily, and for an economical plant there should be at least four to six kilns.

## LIME MANUFACTURE.

Great strides in the way of improvement in lime manufacture have been made in the last few years. This has come about through an awakening of the manufacturers to the fact that they were no farther ahead than they were fifty years ago and had just followed in the footsteps of their fathers. So when it became necessary for many plants to change from wood as fuel to coal they were all at sea as to how to do it and had no idea but what a kiln that was a success with wood would do as well with coal. But they soon found out that such was not the case, and blamed it all on the coal, and said that good lime could not be made with coal. There were those, however, who persisted in their efforts and soon found that by modifying the kiln lines, the

\* Read at the convention of the National Sand-Lime Brick Manufacturers, at Columbus, O.

furnace dimensions and draft conditions a good lime could be produced with coal as fuel and at a reasonable cost.

About this time the National Lime Manufacturers' Association was formed, and, through its medium, a mutual exchange of experience and ideas was brought about, aiding materially in the production of individual investigation and experiment, which has been very productive, since all new plants are being put up along modern lines. Instead of making extensive repairs on old and inefficient plants, new ones are being put up and the old ones abandoned. There has also been a strong tendency to centralization of manufacture at the most economical points of distribution, where the best product of each type of lime could be produced economically.

Another evidence of progression in the industry is the fact that today many of the manufacturers have so improved their methods of accounting that they can tell you the cost at almost any point in the operation, while ten years ago the average manufacturer could hardly tell you whether he was in debt or not, and sometimes was very uncertain about that. What it cost him to make lime and deliver it he guessed at, and sold it at any price that he heard that his neighbor manufacturer was asking for it, or at a little less. But association and organization have materially changed all this, and the lime manufacturers of today bid fair to be a progressive and aggressive lot of fellows in the future. They are, however, only just beginning to realize that the application of the same technical methods which have introduced so many economies in other industries will be of benefit to them and save them money. As a result of this, at some plants the fuel cost has been cut completely in two with no additional labor cost. The fuel cost today varies widely at different plants of approximately the same size. Sometimes it is the kind of fuel used; again it is the location of the plant, and in other cases it is the construction and operation of the plant. Small plants almost invariably have higher costs for both labor and fuel. Especially is this the case on the labor end of the cost of production. The total cost of production ready to load on the cars in Ohio is approximately as follows for bulk lime, and probably represents a fair average for the Central West:

	Cents per barrel.
Fuel .....	7.45
Labor for all purposes .....	13.70
Fixed charges .....	4.00

This would make the lime cost the manufacturer, without the cost of labor for loading and interest on investment and selling expenses, about \$2.50 per ton in bulk. When shipped in barrels the cost will be from \$2.10 to \$2.50 additional to the lime manufacturer. The fuel cost given above is the total fuel for the quarry, and the plant as well as for the burning of the lime. Very large and well managed plants do better than this, and all small plants (say, two or three-kiln plants) seldom reach this efficiency.

High fuel costs are often due to excessive radiation caused by faulty construction of kilns; i. e., thin walls on kiln, and especially on furnaces. In other cases it is caused by the excessive use of cold air. In one case, which came under the writer's observation, by a reduction of the air excess the same capacity was maintained with approximately 50 per cent of the fuel formerly used.

The sand-lime brick manufacturer should purchase, whenever it is possible to procure it, a lime that has less than 2.5 per cent of total impurities. He should also, whenever it can be had at a reasonable price, use a lime that has not less than 94 per cent calcium oxide, and the nearer 100 per cent calcium oxide it is the better will it be. He should also have a lime that has been very recently burned, but it should be one day old before slaking, since hot lime right from the kiln does not slake so freely and completely as lime that has cooled for twelve hours or more.

## FRANK ALSIP

Frank Alsip, one of the best-known brick manufacturers in the United States, inventor of numerous improved brick-making devices, an argonaut in the California gold fields in '49, and a wealthy and prominent resident of Chicago for years, died at his home, 445 Ashland boulevard, at 8:30 o'clock Friday, December 20th.

The immediate cause of death was cirrhosis of the arteries. Last January Mr. Alsip was afflicted with a severe attack of rheumatism, resulting in a weakening of his constitution, from which he never fully recovered. A marked change for the worse was noted in his condition a few weeks ago, and from that time he failed rapidly.

Mr. Alsip was born in Pittsburg, Nov. 17, 1827. He began work at the age of 12 years in a brickyard in Pittsburg. In 1849 he crossed the plains and became a prospector for gold in California. He returned in 1852 and removed to Prairie du Chien, Wis., in 1857.



FRANK ALSIP

After the Chicago fire he engaged in the brick manufacturing business in this city as a member of the firm of Hayt & Alsip. In 1885 he established, with his son, the firm of F. & W. H. Alsip, which was incorporated in 1887 as the Alsip Brick Company, of which he was president. He established brick manufacturing plants throughout the city which had a total capacity of 100,000,000 brick per annum.

He fought the battles of life with only a primary school education, was a good man, worked hard, and paid his debts. His children loved him and his friends respected him.

He is survived by Major Frank B. Alsip, formerly of the First Illinois Cavalry, and a veteran of the Spanish-American war; Captain Charles H. Alsip, now of the First Cavalry; Mrs. W. B. Weigel, and Mrs. George R. Linn, all of Chicago. His wife and two other children, W. H. Alsip and Mrs. W. E. King, died some years ago.

## FUEL FOR STEAM RAISING

Coal used for steam-making purposes should be of such a grade as to take fire easily and burn rapidly with a steady flame. In order to kindle readily, it is necessary that the fuel shall contain a certain amount of volatile matter. Another point to be desired in a steam coal is a low percentage of ash, as this will reduce the expense of handling refuse. Sulphur should not be present in any great proportion, as it aids clinkering and corrodes the boiler surfaces.

To conform to such requirements as these the choice of good steam coals narrows down to anthracite, semi-anthracite and semi-bituminous—that is, to those coals in which there are from 75 to 90 per cent of fixed carbon, and from 25 to 10 per cent of volatile matter in samples dry and free from ash. Of the three grades mentioned, the semi-anthracite and semi-bituminous are to be preferred to the anthracite, since they ignite more readily and burn more freely.

When a charge of coal high in volatile constituents is fed into a furnace there is a sudden formation of a large volume of combustible gases, due to the heating of the charge. To have perfect combustion a correspondingly large volume of air must be admitted at the same time to unite with the hydrocarbons. If sufficient air is not supplied there will be a loss due to the escape of unburned combustible. On the other hand, if the supply of air is continued beyond the time when the volatile matter is driven off and burned, there will be loss due to the excess of air over and above that required to furnish oxygen for the combustion of the fixed carbon. It is an exceedingly difficult matter to vary the air supply according to the instant demands for oxygen in the furnace, so it is customary to furnish a regular supply about twice as great as that theoretically needed to give perfect combustion of the fuel.

A fuel that is high in volatile matter, as, for example, a bituminous coal from the Western fields, burns with a long smoky flame. If, as is commonly the case, these flames strike against comparatively cold tubes or plates before combustion is complete, the gases are chilled, combustion is checked, and soot is deposited on the boiler surfaces and in the fire tubes. The escape of unburned gases is, of course, a direct loss.

It has been found that the highest evaporative results per pound of fuel have been obtained by the use of semi-bituminous coal. Such coal kindles easily, burns without smoke, has a short flame, and may therefore be used in firebox, return tubular, or water-tube boilers with little loss due to chilled gases. As a rule, it contains small percentages of ash, moisture and sulphur.

The selection of a grade of coal to be used for steam generation will involve the careful consideration of several factors that affect the result. Of course, the ultimate aim is to obtain as great a number of available heat units as possible at the lowest cost for fuel and working combined. Thus, a cheap fuel may cause so much trouble to the fireman as to prove more costly in use than a more expensive fuel.

In selecting a fuel, it is necessary to know the following:

The cost per ton of the several kinds of fuel that are available; the heat value per pound of each of the fuels; the percentage of the heat value per pound which may be considered as available for heating purposes in the boiler; the highest rate of evaporation of the boiler or boilers with different fuels; the cost of handling the different fuels, as well as the cost of handling their refuse; and the freedom from smoke production of the several kinds when burned in the furnaces considered.

The heat value of coal per pound is not alone a safe guide in the selection of a boiler fuel, for the reason that the boiler setting or the grates may not be at all adapted to the economical use of certain grades. Thus, if bituminous coal is to be burned, the furnace must be arranged for a gaseous, long-flaming coal, whereas with anthracite the flame is very short, and the fire may be kept in closer proximity to the tubes or shell of the boiler without danger of cooling the hot gases too quickly and thus producing smoke.

RELATIVE VALUES OF DIFFERENT COALS.

COAL	Semi-bituminous Coal—100	
	Combustible	Coal
Anthracite .....	93	89
Semi-Anthracite .....	94	91
Semi-Bituminous .....	100	100
Bituminous (East U. S. A.) .....	95	95
Bituminous (West U. S. A.) .....	90	77
Lignite .....	77	56

The same boiler, with different fuels, will give different evaporative efficiencies—that is, the available heat in any given case depends upon both the boiler and the fuel.

If a plant requires a certain output of water, and additional boilers cannot be installed, owing to lack of room or other reasons, then the coal selected will be simply one of having high enough evaporative power, with the given boilers, to furnish sufficient steam to the engines, regardless of whether it is the cheapest or the dearest.

Again, the draught obtainable in a plant may influence the selection of a fuel. If the chimney is designed for certain conditions, it is possible that an attempt to change both the grade and the kind of coal would result in trouble with the draught. Consequently, the maximum draught pressure obtainable with the existing chimney must be known before the wisest selection of a fuel can be made.

The percentage of ash in a coal is an important factor in determining its desirability as a regular fuel. Generally speaking, the cheaper the grade of coal used, the greater the percentage of ash and clinker, and the greater the difficulty in keeping a clean fire. With stationary grates, the use of the sledgebar at frequent intervals causes wear and tear on the grates, and results in shaking a larger proportion of the fuel into the ashpit, where it forms a direct loss.

The handling of the ashes also becomes an important item, especially in cities where it is necessary to cart them away or otherwise remove them from the vicinity of the plant. All other things being equal, therefore, the coal that contains the least percentage of ash will be found the most economical.

## BRICK-MAKING IN CUBA

Quite a number of new brick-making industries have been started in Cuba since the arrival of the United States troops and the more quiet conditions. Last year many of the works were idle, due to lack of confidence. The writer has been traveling throughout the island of Cuba, and has taken special observation of the flourishing condition of the brick-making yards. There is considerable building in progress in Havana, and other section of the island, resulting in the demand for brick. The Cuban brick-making establishment is quite an institution. Almost everything can be made in open air. It is true that there are heavy rains to interfere with the operations at intervals during the year, but for the most of the time it is clear and pleasant. The works are



A CUBAN BRICK PLANT

more open here than in any country visited by your correspondent. The Japanese have their brick-making plants well sheltered and the kilns are underground. The Chinese enclose and brick up much of their plant; while the brick makers of the Philippines have great mounds to protect certain operations in the process of brick making. In Cuba you can see much of the work in the open.

There are some sheds and a few structures for the protection of the machinery, otherwise most of the work is conducted on the outside.

The workmen are chiefly Cubans. There are Spanish and other foreigners including some Chinese coolies, but the Cuban laborer predominates. His wage rate is low compared with the cost of similar labor in the United States. This is an advantage that the brick manufacturers of the country have. They may have to pay excessive rates of duties and freights on imported machinery and supplies, but they can make up for it in the cheaper labor. It takes a long time to get machinery here from the United States. The brick makers are variously handicapped in this way. But when it comes right down to the labor problem, the native help is useful. There are strikes and there are other difficulties arising, but taking it year after year, the Cuban

manufacturer is not badly off in the respect of labor. The laborers often live on the grounds having their own cook. They can live very cheaply by clubbing in on a mess. Hence the low wages means a great deal to them, whereas the same wage scale would hardly pay for the support of the family of the hard working laborer of the American brick-making plant.

As I traveled about the various brick yards where work was in progress, or where they were putting up new structures and putting in new machinery, I noticed that the American boss prevailed. I would enter a works and look about. In a few minutes a man would approach and in good English give me a welcome. Almost always this English-speaking man was the boss.

These men are experienced brick makers from the United States who have been engaged at liberal wages to undertake the supervision of the installation and manufacturing.

Bricks have been made in Cuba since the beginning of events in the Cuban history. But until the past generation the processes were of the crudest sort. Even up to five years ago, the very crudest patterns of machines were used. I saw many of these ancient devices in service. Nevertheless, the advent of the modern machinery has worked wonders in the improving line. So that in many establishments one may see the improved type of machine operating at high speed along side of the old pattern. Many places in the interior they still use old machinery and devices and there is a great opportunity for the builders of American



CUBAN BRICKLAYERS AT WORK

brickmaking machinery to dispose of modern pattern machines to these works. I find that the users of the machines are not exactly particular about obtaining the very latest designs. In fact, they would rather have the more simple machines. I spoke to several managers who told me that they were afraid to buy the very recent patterns of labor-saving machines just now for fear that said machines would be a little too far advanced for the native help to manage. Hence machinery of some years back is selected, trusting



that it will neither be out of date nor so modern as to be fitted with an excess of labor-saving attachments and complicated to the native's eye.

The engines which they are putting in are very much up to date. The plants for generating the steam power are modern. This part, in many instances, is as near up to date as one could in an American works.

Of course there are all kinds of brick yards. There are some little institutions which are installed in the woods where one or two workmen combine to make enough brick to support a family. They labor with the clay and then they devote a period to making the brick and some other time the burn them. Then they go to the market and peddle



CUBAN BRICK PLANT NEAR TOLEDO, HAVANA, CUBA

the brick and get the cash. One may see wagons of brick being carted about where there are brick layers at work and the carts stop and a bargain is made with the boss and the brick are deposited on the ground near the workmen. The hand-to-mouth system prevails throughout the island.

The brickmakers of Cuba have the advantage of good clays to work with. There are numerous good clay beds, particularly in the vicinity of Havana. I found a number of brick-making plants just outside of the city limits. The clay is often tinged with a whitish substance; there is much lime in the soil. There are reddish properties and the soil is often a red color for miles around so that the rain waters are tainted or colored by it. The lime which prevails in many sections is very strong. There are lime works established near many of the brick works and the two are often worked by the same man.

The brick of this country is usually a dull brown. There is a brick which possesses the color of the brown dust and this shade seems to be popular among the house builders. The brick of Cuba is used for flooring and for the making of mantels. There are but a very few fires in this country due to the extensive use of brick. There are brick of various colors and these are very ingeniously employed in the formation of patterns. Some excellent designs are worked out in walls with the variously colored brick. The brick are dyed in some cases, while in others the tints are obtained by mixing the various kinds of clay. The brick walls of some of the exteriors of houses in Cuba are decorated with regular oil color pictures. It is a strange plan, but attractive and novel to the tourist. The artists often get a fine landscape picture right on the exterior wall of the house.

"R."

## THE STEAM BOILER AS APPLIED TO BRICK-YARD PRACTICE

By W. S. STAFFORD, M. E.

A boiler is primarily a steam generator and from its inception has included many types. The two classes most popular, however, are the fire tube or return tubular and the water tube types, the former being more generally used on account of its adaptability to small plants. Although other types have advantages under certain conditions, it is generally considered the standard because of its reliability, economy and the ease with which it is handled. This boiler is manufactured by hundreds of concerns all over the country and there is little, if any, difference in the various makes, except workmanship and quality of material. The sizes are standard and an investigation of the specifications of the different builders, will show that all details, such as size of blow-off, feed, safety valve, gauge cocks, etc., are practically the same.

The construction of this kind of boiler has been greatly improved upon in the last decade, particularly in the riveting. But very few old style lap joint boilers are now made, butt joints being generally specified. The efficiency of this latter joint is much higher, and the first cost of a boiler built in this way, is but very little more than for the old



KILNS OF A CUBAN BRICK PLANT

style lap joint. The difference is so small that the cheaper type should not be considered. The butt, or stronger joint, is used for longitudinal seams and is usually double or triple riveted, even quadruple riveting being sometimes specified. The circumferential seams on this type of boiler are, however, generally single riveted. This class of boiler is, in most cases, built without a dome, experience having proved that it is almost useless and detracts rather than adds to the efficiency of the boiler.

Any insurance company, taking boiler risks will gladly furnish specifications for a modern up-to-date return tubular boiler, with which a working pressure of 125 pounds or even 150 pounds can safely be carried. By all means get this data if you are in the market for a boiler and if it is built exactly in accordance with the specifications, you can be sure of its good qualities. The necessity for a well made boiler will be appreciated when the enormous amount

of stored explosive energy is known. Wm. Kent, in his "Mechanical Engineer's Pocket Book," quotes Prof. R. H. Thurston, in which he says: "A boiler 60 inches in diameter and 15 feet long, has 66 3-inch tubes. It has 850 feet of heating and 30 feet of grate surface; is rated at 60 horsepower, but is more often driven up to 75 horsepower; it weighs 9,500 pounds and contains nearly its own weight in water, but only 21 pounds of steam when under a pressure of 75 pounds per square inch, which is below its safe allowance. It stores 62,000,000 foot pounds of energy, of which but 4 per cent is in the steam, and this is enough to drive the boiler just about one mile into the air, with an initial velocity of nearly 600 feet per second." In view of this fact, is it any wonder that a poorly constructed or run down boiler explodes.

No matter how good a boiler you may have, it will never come up to average efficiency unless properly set and connected. Follow out instructions faithfully in this respect and be sure you have enough grate surface and sufficient room under the boiler for as near perfect combustion as possible. Also see that there is enough draft and air space through furnace and between grates. Air space in grates should be from 30 to 50 per cent of the total area. Boilers are too often crowded, which materially shortens their life. In determining the proper capacity of boiler to use, it is well to remember that you will require steam for other purposes than merely driving the engine. You doubtless have numerous pumps, and perhaps other auxiliary or heating apparatus that will need live steam. A boiler horsepower is the evaporation of 30 pounds of water per hour from a feed water temperature of 100 degrees Fahr. into steam at 70 pounds gauge pressure. This standard was accepted by the American Society of Mechanical Engineers in 1884.

The size of the boiler should depend a great deal upon the steam consumption of the engine and while 30 pounds per horse power per hour is considered sufficient for the average engine, the cheaper grades of prime movers require much more. And don't forget that the average steam pump will take two or three times the steam per horse power per hour as the ordinary engine will consume.

Too much cannot be said of the necessity of keeping a boiler clean and free from scale. A good open feed water heater will do wonders sometimes in this direction and will remove from the feed water the greater portion of the impurities by which scale is formed, such as carbonates of lime, magnesia, etc. Be sure, however, that the heater has ample filtering capacity. This is most important as is also the frequent renewal of whatever material is used for filtering. Of course, there are certain impurities that cannot be precipitated or held in suspension in the heater through the action of the exhaust steam, such as sulphates of lime, etc. These, however, are in the minority and water containing them is usually chemically treated or the remedy applied in the shape of a boiler compound. Remember scale is a poor conductor of heat and will not only injure the heating surfaces by rendering them liable to burn, but will be the direct cause of an increased fuel consumption. In addition to keeping boiler free from scale as possible, the tubes and flues should be frequently cleaned, depending upon the fuel used and nature of the water. If the heating surfaces

are allowed to become covered with a thick coating of soot, it will greatly affect the economical operation of the boiler.

The importance of a good open feed water heater cannot be exaggerated. By utilizing the exhaust steam from the engine or pumps, the feed water can be heated to a temperature of 204 to 210 degrees Fahr. This is worth considering when we find that statistics prove that one per cent in fuel is saved for every ten per cent the water is heated above 70 degrees before being pumped to the boiler. In addition to this the exhaust steam condensed in heating the water is fed to the boiler in a purified state, and as a usual thing is a decided advantage. Another feature of a good heater is that all of the exhaust steam entering the same, is not used in heating the water, but all of it passes over or through oil separators, which in some heaters are merely a series of corrugated baffle plates. The steam not condensed passes from the heater in a purified state in a better condition to be used for many purposes than if it was impregnated with oil. This result can be obtained in most good heaters without causing a back pressure on the engine.

Of water tube boiler there are many types and under some conditions they possess decided advantages over a return tubular boiler. They are undoubtedly safer than the latter type when operating continuously under extremely high pressures; not because of any superiority of material or workmanship, but mainly on account of multiplicity of parts. Its first cost is much more than a tubular or fire tube boiler, and it is doubtful if, under ordinary conditions, it is any more economical or efficient. Economy and efficiency of the various types of boilers depends entirely upon the conditions under which they are working. Whether it be a return tubular or a water tube, if the same working conditions exist and the same care and intelligence exercised in their erection and operation, the result will be substantially the same from a standpoint of economy. This being true the lower first cost of a tubular boiler will no doubt appeal to the average buyer. As stated before, the insurance companies, taking boiler risks, do not hesitate to allow 125 to 150 pounds working pressure on a well made triple butt joint boiler, and a very few engines in ordinary power plants are built for a higher pressure than 125 pounds. The return tubular boiler is more easily cleaned much simpler in construction and its reliability has never been questioned.

Do not construe this article to be an adverse criticism on water tube boilers. As stated before they possess decided advantages under certain conditions, but for use in an average power plant, the higher first cost is not justified by any economical or efficient results. Any type of boiler to be successful, requires intelligent care and close attention to details. Careful firing and a knowledge of the necessary requirements of perfect combustion will go far toward making a success of any good boiler. All connections should be frequently examined and tested. Corrosion of safety valve and steam gauge is very often the cause of serious trouble. The writer remembers a certain engineer in southern Indiana who was usually boasting of the perfection of his plant. One day, however, his boiler exploded and completely wrecked the entire factory. When the steam gauge was found it showed a sixty-pound pressure, but an examination proved that it was set and several hundreds pounds pressure would not have been sufficient to change the indicator. The safety valve was found in a wood shed about three thousand feet away, it having gone through the roof. It also was in frightful condition and required about three thousand pounds pressure to move the valve from its seat.

It is not often, however, that such carelessness is shown, but proves that close attention to details, not only by the engineer, but also by the superintendent or proprietor, will prevent catastrophes that may perhaps cause a loss of life.

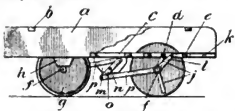
## CLAY RECORD.

NEW INVENTIONS THAT ARE OF INTEREST  
TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

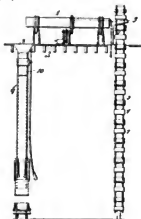
869,353. Brick-Truck. Henry J. Dundas, Leaside Junction, Ontario, Canada. Filed Nov 1, 1906. Serial No. 341,629.

In a brick truck, in combination with the axles and carrying wheels, of a frame adjustably mounted on said axles, connecting links adjustably connecting said frame with said axles, operating levers engaging with said axles and frame, and operating levers engaging with said frame and axles, substantially as described.



In a brick truck, in combination with the carrying axles and wheels, of a frame adjustably mounted on said axles, said frame comprising sides and cross braces, connecting and fulcrum bars set in said frame, connecting links adjustably connecting said axles with said connecting bars, operating levers connecting with said axles and connecting bars, operating levers mounted on said fulcrum bars, said operating levers engaging with crank arms mounted on said axles, a lever bar mounted in said frame, coupling bars connecting said axles with said lever bars, bearing blocks set under edges of said sides of frames, substantially as described.

871,363. Concrete Mixing and Molding Apparatus. Charles R. Schmidt, Baltimore, Md. Filed March 12, 1907. Serial No. 361,914.

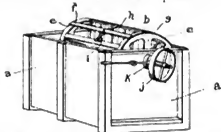


A continuous mixing and molding apparatus, comprising a mixing tank located on an elevated platform, a plurality of endless conveyers arranged and adapted to convey the different ingredients of a concrete mixture, in different proportions to the mixing tank, a chute extending downwardly from the platform and a grid or riddle arranged at the upper end of said chute.

In an apparatus for filling molds, a vertical chute for delivering material to molds from a height, said chute being provided with a measuring chamber, means for regulating the capacity of said chamber, and a vibrating grid or riddle, substantially as described.

870,357. Washing-Machine for Brick-Molds. John W. Gouding, Trenton, N. J. Filed July 5, 1907.

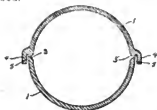
A washing machine for brick molds including a tank, a rotary wheel in said tank composed of opposite heads having radial grooves in their inner faces adapted to receive the molds, and means for engagement with the outer faces of such molds to retain them in position.



A washing machine for brick molds including a tank, a rotary wheel in such tank composed of opposite heads having radial grooves in their inner faces adapted to receive the molds, brace bars connecting said heads and spring devices carried by said brace bars and capable of engagement with such molds to retain them in position.

871,389. Drain-Pipe. Edwin J. Cochran, Sterling, Ill. Filed Sept. 7, 1907. Serial No. 391,829.

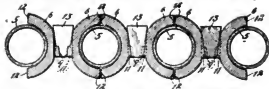
A device of the class named, comprising a plurality of pipe sections, provided at alternate ends with annular rims; a pair of longitudinal grooves on the inner side walls of said sections; and a pair of longitudinal flanges on the outer walls of said sections, spaced apart therefrom, and adjacent to said grooves on the inner walls of the sections, substantially as described.



A drain pipe, comprising a plurality of sections, provided with a pair of longitudinal grooves on the inner side walls thereof; annular flanges on alternate ends of said sections, each of such flanges being separated into two parts along the line of said grooves; and a pair of longitudinal flanges on the outer walls of said sections, adjacent to said grooves, and spaced apart from the wall of the pipe, substantially as shown and described.

871,838. Tile Construction. John F. Warwick, Chicago, Ill. Filed March 10, 1907. Serial No. 362,653.

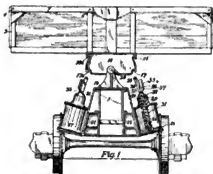
A tile construction comprising pairs of tile having oppositely disposed recesses adapted to form a series of channels, a series of outwardly extending ribs on the sides opposite said recesses forming channels therebetween, and a tapered key fitting within said channel holding said tiles in place.



A tile construction comprising pairs of tile having oppositely disposed semi-cylindrical recesses adapted to form a series of tubular channels, a pair of outwardly extending ribs oppositely disposed to said recess, forming with the ribs on the adjacent tile a channel at right angles to said tubular channel, and a key adapted to fit within said channel and to lock said tiles securely in place.

872,057. Dump-Car. Charles H. Doty, Columbus, Ohio, assignor to The Kilbourne and Jacobs Manufacturing Company, Columbus, Ohio, a Corporation of Ohio. Filed Mar. 11, 1907. Serial No. 361,784.

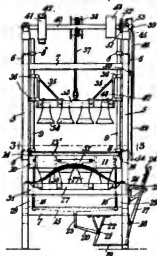
In a dump car a car body mounted upon a central pivot to swing vertically, fluid operated means arranged on one side of said pivot adapted to be moved into engagement with said car body to dump the same, and other fluid operated means arranged on the opposite side of said pivot adapted to be moved into engagement with said car body to right the same.



In a dump car, a car body mounted upon a central pivot to swing vertically thereon, a plate on said car body having notches arranged in a vertical series on opposite sides thereof, fluid operated cylinders arranged on opposite sides of said pivot each having a piston rod adapted to engage said plate in the lower notch on one side thereof to dump said car body, the latter being adapted to be righted by the engagement of a piston rod of a cylinder on the opposite side with an upper notch on said plate.

872,401. Brick Machine. Levi D. Wogoman, Versailles, Ohio. Filed Oct. 2, 1906. Serial No. 337,118.

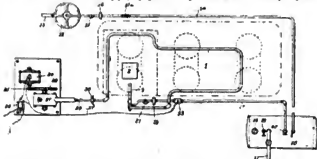
In a brick-making machine, a supporting frame, a power-shaft journaled in the frame and provided with a friction



pulley, an auxiliary shaft provided with a similar pulley adapted to engage the pulley on the power-shaft, a vertically movable mold-carrying frame, ejecting means disposed in the path of movement of the mold-carrying frame for exposing the bricks when the frame is moved to lowered position, a tamping element, a flexible connection between the auxiliary shaft and tamping element, an eccentric mounted on the auxiliary shaft for moving the pulleys into and out of engagement with each other thereby to raise the tamping element, and means for locking the tamping element in elevated position.

872,023. Oil-Burning System. Ira E. Smith, Stockton, Cal. Filed July 30, 1906. Serial No. 328,307.

In a oil burning apparatus, a fire chamber, a burner associated with said fire chamber, a fuel supply pipe connected to said burner, an air supply pipe leading through said fire chamber and connected at one end to said burner, means connected to the other end of said latter pipe for supplying air under pressure thereto, an electric motor, connecting means between said motor and the air supplying means, a valve in said fuel supply pipe and provided with a project-



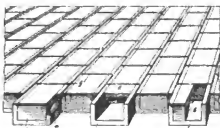
ing stem, an electro magnet adapted when energized to influence said stem and maintain said valve open, a spring operating to close said valve when the electro magnet is de-energized, and electric conductors between said magnet and motor.

872,100. Sewer-Pipe Cleaner. Thomas Cantwell, St. Louis, Mo. Filed Oct. 12, 1906. Serial No. 338,667.



The combination, with the flexible handle, of a head comprising a sleeve secured on the inner end of a handle and provided with an annular flange, a detachable extension provided at its base with a flange coextensive with and of a form corresponding to the first-mentioned flange, wires radially arranged between said flanges and means for clamping the flanges together on the wires, the said extension being further provided with a socket in its forward end for the reception of the shank of a tool and having a wheel-bearing to the rear of said socket, and a wheel larger in diameter than the flanges supported on said bearings.

872,008. Ceiling and Floor Composed of Tiles. Heinrich Westphal, Posen, Germany, assignor to Richard Faber, Fernersleben, near Magdeburg, Germany. Filed Jan. 12, 1905. Serial No. 240,725.



A ceiling or floor comprising hollow structures each consisting of two channelled tiles one embracing the other with the channels extending transversely to each other and the faces on the one closing the channel of the other and vice versa, said hollow structures being cemented together by suitable cement.

## CLAY RECORD.

## CLAY RECORD.

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"I like to read American advertisements. They are in  
themselves literature, and I can gauge the prosperity of the  
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the  
very time that advertising should be the heaviest. Ninety-nine  
out of every hundred merchants advertise most when there is  
least need of it, instead of looking upon advertising as the pan-  
acea for their business ills.—John Wanamaker.

## CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick  
and Tile Association will be held at Des Moines, Iowa,  
January 22 and 23, 1908.

The eighth annual convention of the Wisconsin Clay  
Workers' Association will be held at Milwaukee, February  
12, 13 and 14th, 1908. Headquarters at the Hotel Blatz.

The fourth annual convention of the National Association  
of Manufacturers of Sand-Lime Products will be held at  
Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic So-  
ciety will be held at Columbus, Ohio, February 3d and  
4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving  
Brick Manufacturers' Association will be held at Columbus,  
Ohio, February 3d and 4th 1908. Headquarters at the  
Southern Hotel.

The twenty-second annual convention of the National Brick  
Manufacturers' Association will be held at Columbus, Ohio,  
February 3d to 8th 1908. Headquarters at the Southern  
Hotel.

The thirtieth annual convention of the Illinois Clay  
Workers' Association will be held at Peoria, Ills., Jan. 14-15  
and 16th 1908. Headquarters at the National Hotel.

Some men are born small and some others shrink.

A prosperous New Year to the readers of THE CLAY  
RECORD.

Do your duty and subscribe for THE CLAY RECORD today.  
Begin with the thirty-second volume.

The low rumbling sound you hear is the approaching of  
the annual water wagon. Get your tickets early and avoid  
the rush.

There isn't much hope for the man who is unable to con-  
vince himself that he isn't just a little better than his  
neighbor.

Hunt around and find your last year's resolutions. They  
are as good as new and you can save money by using them  
over again.

A diplomat is a man with an ax to grind who gets an-  
other man to turn the grindstone and makes him believe  
that he is being entertained.

You read the article in the last issue on "Steam Engine  
as Applied to Brick Yard Practice," by the well-known  
mechanical engineer, W. S. Stafford. As promised for this  
issue, we are favoring you with one in this issue on "Steam  
Boilers as Applied to Brick Yard Practice," by the same  
well-known authority, and you are assured that it will be  
followed with one on "Economic Power Plant Auxilia-  
ries." Read this one over and see if you can afford to miss  
the rest of them.

## A BIG YEAR WITH BANGOR BRICK YARDS

Five millions of brick have been made at the yards of the  
Bangor (Maine) Brick Co., in Warren street during the  
season just past, the largest output in the history of the  
brick making industry in Bangor. Rarely have the brick-  
makers had such weather conditions to contend with, yet  
the number of brick lost by rain amounted to only 35,000,  
compared with a half million lost in 1906.

In 1906, about 3,500,000 brick were made at the com-  
pany's yards, three millions being merchantable.

The price of brick has changed but little during the past  
two or three years. Brick which now sell for seven and  
eight dollars per thousand were sold ten years ago for  
\$4.75. Face brick which sold for \$6 per thousand in 1897  
cannot be bought today for less than \$12.

The present management of the Bangor Brick Co. has  
installed two new mud machines and these, and the two  
sand machines can turn out about 60,000 per day.

## OBITUARY

Mr. E. W. Face, a well-known citizen of Norfolk, Va., and member of the firm of E. W. Face & Sons, brick manufacturers, died at his home after a brief illness.

Herbert A. Johnson, an Odd Fellow and one of the best known operative potters in the Ohio Valley, died suddenly at his home in East Liverpool, Ohio, aged 45 years.

Frank Alsip, one of the best known brick manufacturers in the United States, died at his home in Chicago. He was 80 years of age.

Harry C. Wettengel, age 37 years, treasurer of the Central Brick Co., Pittsburgh, Pa., died at Salt Lake City, Utah, following an operation for appendicitis.

Peter Eno, one of the premier manufacturers of brick in Exeter, N. H., died at the hospital where he was taken to undergo an operation on a carbuncle on the neck. He was 65 years' old and leaves a widow, six sons and one daughter.

John K. Biekel, Nebraska City, Neb., died at his home, aged 52 years. He leaves a wife, two daughters and a son.

**PARTIAL PROGRAM OF THE 30th ANNUAL  
MEETING OF THE ILLINOIS CLAY  
WORKERS ASSOCIATION, PEORIA,  
JAN. 14, 15, 16**

The program for the thirtieth annual meeting of the Illinois Clay Workers' Association, which is to be held at the National Hotel at Peoria, January 14, 15 and 16th, is nearly completed and ready for the printer. The following are some of the subjects selected and accepted by noted writers:

The Ceramic Department of the University of Illinois, and What it is Trying to do .....	C. W. Rolfe.
The Efficiency of Various Methods of Power Transmission .....	William Simpson.
Fuel Consumption in Burning Brick and Tile ....	A. Vogt.
How to Create an Increased Use of Drain Tile .....	J. W. Mamer.
Brick and Tile Machinery .....	R. T. Stull.
Clay vs. Cement Fire Proofing .....	F. W. Fitzpatrick.
How You Can Increase Your Profits by Incorporating: Lessen Your Labor Troubles, etc. ....	W. W. Phillips.
Accident Insurance .....	F. Plumb.
The Manufacture of Enameled Brick .....	E. Hardy.
The Qualification of a Factory Superintendent, .....	Marion W. Blair.
The Manufacture of Hollow Building Blocks ..	H. B. Fox.
Electrical Transmission as Applied to Brick and Tile Plants .....	W. S. Stafford.
Present Demands for Brick in Architecture .....	—
Personal Injury Actions Against Clay Companies ..	—
Stone Ware .....	E. E. Spencer.
Controlling, Drying and Burning Operations .....	A. V. Bleininger.
Some Work of the State Geological Survey on Fire Clays .....	E. F. Lines.

Beside these papers, there will be many other subjects for discussion.

## ACCIDENTS, DAMAGES AND FIRES

H. A. Spencer has begun action to recover \$25,000 for the loss of a leg while at work in the plant of the Albert Lea (Minn.) Brick & Tile Company.

The commissary of the Bessemer (Ala.) Fire Brick Co. was damaged by fire to the extent of \$12,000, partly covered by insurance.

Andy Baird, of Bolivar, Pa., employed by the Lincoln Brick Co., had his hand blown off and his skull fractured by a dynamite explosion.

The Canadian Bank of Commerce have issued a writ in the High Court against the McIntosh Brick Machine Co., Limited, Sarnia, Ontario.

Andrew J. Gash, a brick manufacturer of Clinton, Ill., filed a petition in bankruptcy scheduling his liabilities at \$1,579 and assets at \$1,690.

W. B. Lower, Sioux City, Iowa, has been appointed the receiver for W. C. Ritz, the Sergeant Bluffs brick maker, and has taken charge of the plant.

Ole Hagen was crushed to death by a cave-in of earth at the clay pits of a Redwing (Minn.) clay works. Tons of earth fell upon him and he was buried alive.

G. K. Lien, engineer of the Los Angeles (Cal.) Pressed Brick Co., was turned about the face, neck and hands by an explosion of gas which scattered oil in one of the kilns.

Harry M. Thompson, of Almira, has brought suit against the mortgagees of the Cheney (Wash.) Brick & Tile Mfg. Co., to recover \$60,000 for machinery furnished to the company.

The plant of the Gadsden (Ala.) Brick Co. was damaged by fire to the extent of \$60,000, which is covered by insurance. W. T. Christopher is president of the company. The plant will be rebuilt.

Spence Russell, an employe of the Peebles Brick Co., Portsmouth, Ohio, was badly hurt by being caught in an avalanche in the shale bank. His leg was broken and he was injured internally.

An unknown man was found dead in a kiln of the Queen City Brick & Tile Works at Cumberland, Md. He had evidently crawled into the arched opening to get warm and the gases suffocated him.

J. Boice, of Pittsburg, who only recently secured a position with the Trumbull Brick Co., Warren, O., was struck by a train of the B. & O. Ry. He was taken to the Warren Hospital and will recover.

The Boone (La.) Brick, Tile & Paving Co., won out in the damage suit brought against it by one Gordon, for his son, 8 years' old, who received an injury to his leg while playing around the incline at the works.

Elsie Eckerson, a wealthy Haverstraw (N. Y.) brick manufacturer, has been convicted of criminal nuisance on account of the land slides at his clay banks which destroyed life and property. He was indicted in the Supreme Court at Poughkeepsie.

The Plymouth Clay Products Co.'s plant at Ft. Dodge, Ia., is now working a full force. The power was applied and machinery began operations the 9th, inst. They make glazed sewer pipe of all sizes from the clay taken from gypsum mines.

### PROSPERITY OF POTTERS IS LIKELY TO CONTINUE

One of the most important years in the history of American pottery is drawing to a close, and while profits have not been what the manufacturers would have liked to see for a 12-month business, yet the prospects for a greater business and an increase in profits for next year are brighter than ever, says our East Liverpool correspondent.

This was brought about at a recent meeting of the United States Potters' association held at the Hotel Schenley, Pittsburgh, a few days ago, when an all-day session resulted in the manufacturers from all parts of the country reaffirming their old selling lists, which in itself means that present selling lists will be strictly maintained next year, and that no special discounts will be given.

It has been said by many manufacturers that while the cost of raw materials and labor has been increasing constantly during the past year, yet American pottery has been placed on the traders' tables at practically the same price as a year ago. When the cost of production has increased and no increase made in the selling price, it must follow that the margins of the manufacturers have been reduced.

The fact that a high grade of china is now being produced in America shows that the American potter is making marked advances. From the old time Rockingham and yellow ware to a high grade of china has been the step taken by the American pottery manufacturer during the past decade. There is room in the United States for American-made china, and the manufacturers have been quick to grasp the opportunity to supply this ever increasing demand.

The fact that immense deposits of clay have been discovered in Texas which is well adapted to the manufacture of china has put new life into a number of manufacturers. In the past, the bulk of the china made in the United States was from a foreign body of clay.

The fact that the American pottery manufacturers produced during the past year more than \$1,000,000 more of pottery than a year ago, and that this amount is about double that produced three years ago, is a word picture showing how fast the American-made article is taking the place of the foreign article. And, the end of this increase is not yet in sight.

An interesting feature of the trade during the past year is the fact that no one advanced with a proposition to form a combination among the pottery manufacturers of the United States. For years, various eastern interests have taken up an idea of this sort, but in each instance failure was written across the result of their months of labor. It is stated that some manufacturers would be interested in such a proposition, but the majority believe there will never be a unity of interests among the manufacturing potters of the country.

By the starting of the Ford City pottery at Ford City, Pa., and the Wick China Company's plant at Kittanning, Pa., both, however, under the direct management of Charles Howell Cook, of Trenton, N. J., and the new 32-kiln plant of the Homer Laughlin China Company, at Newell, W. Va., tells the story of increases made in the production of

the country during the year. Several small potteries, some located at Derry, Pa., Salineville, O., and a few other small towns ceased operations, but the number of additional kilns started during the year is far in excess of the number which are idle. This is another illustration of the growing demand for American-made pottery.

It is related by many that hundreds of more people could be used in the operating departments of the potteries, but a careful glance over the trade shows that in some sections more people are leaving the trade to take up other vocations than there are entering the plants.

English potteries have been running very well during the past year, and while there has always been a goodly number of English pottery workmen seeking positions in the American plants every year, the number of those coming over this season is far below the list of past years. Yet it has never been denied that there was employment for all English workmen who have "ventured" a visit to the American potteries.

The manufacture of art ware among potteries of the country is increasing at a wonderful rate. Manufacturers have not been slow to develop talent displayed by a workman, and in doing this the trade has been benefited. The fact that American art pottery has been shipped into France, Germany, England and Russia during the past year shows that the ware is of a character to be admired by the most critical of pottery masters.

While the eastern part of the United States has for many years held the position of a leader in the production of pottery, this honor has been wrested from that district and placed in the west. In the eastern Ohio valley, the clay industry is thriving. New plants have been erected and additions made to others in order that production might be increased.

Pottery manufacturers believe that although 1908 is a presidential year, the production of pottery will show an increase over that of 1907. The general ware potteries have spared no effort to get a better line before the trade, and by close maintaining of selling lists, the year should produce good results.

### LONG FIGHT OVER BRICK YARD

After almost two years of litigation, Lihurn M. Hess, Millville, N. J., secured a judgment against Frederick Roedel and Jacob Reick, for \$5000, before Circuit Court Judge Endicott. Reick and Roedel purchased a brick manufacturing plant from Hess two years ago and paid but part of the purchase price. Shortly afterward the plant burned down. Roedel collected the insurance money and placed it in his safe. He claimed that masked robbers forced him to turn the cash over to them.

Hess brought suit against Roedel for embezzlement. The charge was not proven and Roedel brought a counter suit against Hess for damages, charging false prosecution. Hess secured a non-suit. Hess then brought an action on contract and secured the verdict of \$5000. Sheriff Souder made a levy on the property of the defendants, who are engaged in the bakery business. A stay of execution has been granted on the filing of a bond.

**BUILD NEW TOWN OF HOW KIM**

St. Joseph (Mo.) capital has been invested in the building and maintaining of a large brick yard at How Kim, a new city in the northern part of Oklahoma. The company is made up mostly of local people and is capitalized for \$60,000. Work on the buildings has been going on for several months, and they are ready for use, simply awaiting the construction of the 2,000 foot spur from the main line of the Frisco system which passes the land owned by the company.

The plant will be in operation about the first of the year. It is estimated that fully 50,000 brick can be turned out daily. In the property there are eighty acres of brick shale. It is of good quality and it is said that there is enough on the land to run the yards for 600 years.

It is the plan of the company to plot some of the land for a town site. This will be done in the next month or so. A large cement company is planning to enter the ground. The officers of the company are: President, H. Kimber of St. Joseph; vice-president, Charles E. Thornton, St. Joseph; secretary and treasurer, N. B. Howard, Cottonwood Falls, Kas.

**MUST MEET DEMAND FOR ENAMELED BRICK**

Owing to the urgent demand for enameled and fancy brick in the rebuilding of San Francisco the unfinished plant of the Stockton Fire and Enameled Brick Company began operations the 10th. A large force of men is engaged in completing the \$100,000 plant, while another crew is employed molding brick and working the three completed kilns to furnish contractors with building material.

It is urged on the management of the plant that it practically is impossible to secure fire and enameled brick in sufficient quantities on the coast and that unless more material can be obtained contractors will lose heavily. It was not the intention of the local factory to start the fires in the new kilns before the first of the year, but they have been practically forced to answer the demand for material.

**BRICKYARD OWNER, FOUND GUILTY OF MAINTAINING CRIMINAL NUISANCE**

Elsner Eckerson, a wealth brickyard owner, of Haverstraw, N. Y., was convicted by a jury in the Supreme Court at Poughkeepsie of maintaining a criminal nuisance. The trial of the case occupied a week before Judge Mills. It aroused interest on account of the slide of clay banks in Haverstraw several years ago which killed a number of persons.

Mr. Eckerson was indicted under the law relating to criminal nuisance. Charges were made that he has excavated in brickyards which he owns or leases so near the street that he has endangered the roadway and people who may have to pass over it. The trial of the case was moved to Dutchess County on the ground that it could not be impartially tried in Rockland County, where the indictment was found.

Justice Mills postponed sentence. He said the nature of the offense would not warrant a sentence of imprisonment, and he would impose a fine with a view to the expense of the trial, the cost of which is borne by Rockland County. There are other indictments of a similar nature pending against Mr. Eckerson.

**CAN'T EXEMPT COMPANY FOR TAXES**

Judge Evans, in the district court, made permanent the temporary injunction restraining the city council from furnishing the Plymouth Clay Products Company, Ft. Dodge, Ia., free water and exempting it from taxes for a period of ten years. The firm recently built a new sewer pipe factory at the edge of the city, which will start up next Monday with a force of fifty employees. The corporation is composed of home capitalists and the council granted the petition of the Commercial club for free water and taxes, as is commonly granted by other cities as an inducement for new factories to locate. The council granted the request but the injunction compels them to violate their agreement. The injunction is the first of its kind in the state.

**DECISION COVERING BRICK SHIPMENTS IN KANSAS**

The Commission, in an opinion rendered by Commissioner Protry, has announced its decision in the case of the Coffeyville Vitriified Brick and Tile Company against the St. Louis and San Francisco Railroad Company and Chicago, Rock Island and Pacific Railway Company.

It appeared in this case that complainant shipped one car of brick from Coffeyville, Kan., to Duncan, I. T., over defendants' lines, via Chickasha. The shipment was a through shipment, but the joint through rate applied to it was more than the sum of the locals based on Chickasha. The complaint was that the through rate should not exceed the sum of the locals, and the complainant stated that it filed its petition with a view to obtaining a general ruling of the Commission that through rates must not exceed the sum of the locals.

The Commission decided that it can make no such general ruling, but each case must be disposed of upon its own merits. An order was granted, however, awarding reparation and requiring defendants to put in force a joint rate not exceeding the sum of the locals between these particular points on shipments of brick.

**AUTOMOBILE PARTY'S MIRACULOUS ESCAPE**

Sitting in their automobile and carried for fifty yards on the cowcatcher of a passenger engine, every instant expecting to be ground beneath the wheels of the train, was the harrowing experience of S. J. Hewson, president of the Menominee (Wis.) Pressed Brick Company, and Frank Peck, superintendent of the Menominee branch of the company, in Minneapolis, Minn., Dec. 17th. They escaped, however, without a bruise.

The two were returning from St. Paul. When they approached the Oak Street crossing of the Great Northern, Mr. Hewson, who was driving, saw no signals indicating the approach of a train, and after slowing up a moment, started across the track at full speed. When the track was reached he saw the passenger train almost upon him. Instead of trying to pass directly in front of the engine he, with remarkable presence of mind, circled the machine.

The automobile was caught upon the fender and carried some distance with the two men in it.

As the train was running at the rate of ten or fifteen miles an hour it was brought to a stop quickly. The automobile was partially wrecked.



### ENTIRE ITALIAN FORCE AT KERLIN BRICK PLANT LEFT

Thirty-eight men left the Kerlin Brick Company's plant at Logan, Ohio, and went to Columbus. The men were all Italians and their contention was that they quit on account of a dispute in wages. They said their hours had been cut from ten hours a day to eight hours which would only give them \$1.25 a day. On account of this cut in time it so reduced their wages to such an extent that they decided they must make more money, and they asked that they be paid \$1.60 a day, which the company refused to do, consequently the laborers left their work.

The company places the matter in a different light, saying that the shut down of the old plant was not due to the scarcity of men or labor troubles, but because they had received orders for sidewalk brick amounting to five or six kilns and that this would necessitate the changing of the machinery and brick dies which would cause them to close down for some time.

The reduction of the time of the Italian employees was made in order that they might be retained until the repairs could be made and operations could be resumed but their demand for higher wages could not be met and they were allowed to leave. The labor situation at this plant is not at all critical, however, as the company can get all the men they want and their present closing down of the old plant is not due to such a matter.

### BRICK PLANTS MAY BE DIVIDED

At a meeting of the Montello Brick Company, Reading, Pa., the principal business transacted was the discussion of the plans which are well under way for a general reorganization of the company. Although, at this time it cannot be said positively that any definite steps have been taken, it is thought that the foundation for reorganization has been built.

The plan of reorganization appeared satisfactory to all present. The feature is the proposition to separate the various plants of the company.

This is practically to give the bondholders of the Oaks plant, the most valuable, which, it is said, cost \$750,000, and the Perklomen and Perklomen fire brick plants.

It was conceded that the bondholders would get all of their money back and they as well as all other investors would be fully considered and protected in the reorganization.

The Wyomissing, the Montello and the Reading Shale Brick plants, the northern ones, it was argued, should be operated by the Montello Company.

It appears from the plans discussed that majority bondholders, minority bondholders and stockholders of the company are nearing an amicable agreement, which will result in the operation of the plants and the withdrawal of the Montello Brick Works bankruptcy proceedings.

"We want to make brick and stop the expense of the bankruptcy proceedings which will result in the payment of terrific fees," said a prominent bondholder and who was one of the original minority bondholders, "and I think that since the plan has been considered and general satisfaction appears to have been the result, reorganization will follow within a short time and all interested will be equitably and satisfactorily dealt with."

### PAVING BRICK MEN HAVE TARIFF AGENT

At a meeting of the subcommittee of the tariff committee of the National Paving Brick Manufacturers' Association in Cleveland, John F. Lent, of Pittsburgh, was appointed to represent the association in the matter of railway tariffs. Mr. Lent, who is a railway man of experience, will have charge of all the railway questions affecting the association. The association is said to represent about 95 per cent of all the paving brick output of the United States.

### BRICK FAMINE IN YAKIMA

There is a brick famine in the Yakima valley, Wash., which is retarding to an extent building operations. There are practically no bricks in North Yakima, nor at Toppenish, while there are not more than 200,000 at Granger, where they are manufactured. As brick is being used quite extensively in building in this section the contractors have been forced to import them from other cities. At Toppenish work has been postponed on some of the new structures for want of material.

### THE PETTYJOHN COMPANY UP-TO-DATE

The Pettyjohn Company of Terre Haute, Indiana, is in receipt of a very gratifying letter from Mr. S. W. Sharp, who is one of the users of the Pettyjohn portable upright model block machines in Claremont, Virginia. Mr. Sharp writes:

"We have just finished a large barn 40x60 feet, two stories high; 12-inch blocks were used in the walls and my men made on this job on one machine, which was the one purchased from you about two years ago, 600 blocks size 7½x 20x12 inches in ten hours with five men mixing the material by hand and doing all the work. Can you beat that? If you can we will make another record."

Mr. Sharp further wrote that his blocks had attracted much favorable attention, and that he had had many inquiries as to what machine they were made on and what machine was the best. His invariable reply was that the Pettyjohn portable machine is the best and fastest on the market.

In this connection, The Pettyjohn Company advise that they have now passed the 6,000 mark for sales on this particular type of machine, and that every one of the machines was sold under a binding guarantee to give satisfaction or money refunded.

A number of recent shipments have been made to various departments of the United States government, several of which were duplicate orders to the same department. Quite an extensive work is being done at the Brooklyn Navy Yard with machines of a special size, built to order for the heavy work usually called for in government specifications.

The Standard Oil Company and its branches now has in active service over 43 of the Pettyjohn upright model machines. These are principally used along the various pipe lines for the purpose of building pumping stations, warehouses and office buildings. More recently the experiment has been tried in using the blocks for the erection of tall smoke-stacks which is a necessary adjunct to the pumping stations. This experiment has evidently proved successful as the oil company is now getting estimates for the erection of a number of additional smokestacks of similar type.

**SAND OR LIME BRICK OR BLOCK NEWS**

The Detroit (Mich.) Pressed Cement Brick & Block Co. has been incorporated with \$10,000 capital stock.

The Avram-Lect Engineering Co., of New York City, is considering the establishing of a composite brick factory at Little Rock, Ark.

The Cement Tile Machinery Co., Waterloo, Ia., displayed at the Chicago Cement Show a tile-making machine which created interest among visitors.

Charles M. Brooker, superintendent of the Colonial Brick Co., Kokomo, Ind., has purchased a Buick auto. The manufacture of glass brick must be good.

The white brick of the San Antonio (Texas) Brick Company have been excepted by the architects and contractors so that they cannot supply the demand.

N. W. Dunham, of Dallas, Texas, is at the head of a company that will build a \$50,000 sand-lime brick plant at Ardmore, Okla. Natural gas will be used for fuel.

Z. C. Balch, founder and president of the Mercantile Bank at San Antonio, Texas, and others, are seriously considering the building of a sand-lime brick plant in Mexico City, Mexico.

F. H. Smith, of the Wilmington (N. C.) Granite Brick Co. was at the Columbus convention, which was the first sand-lime convention for him. He was a very enthusiastic member. He will make a success of the plant which was the first sand-lime brick plant in America.

I. H. Allen, of the Winchester (Ky.) Granite Brick Co., attended his first convention of the sand-lime brick makers at Columbus. He was the most enthusiastic sand-lime brick man at the meeting. The only complaint that he had was that he could not turn out the brick fast enough to fill his orders.

Lawrence Comerford, the sand-lime brick expert formerly of Little Rock, Ark., has taken charge of the Savannah Sand-Lime Brick Co.'s plant at Eden, Ga., and is turning out more and better brick than the plant has ever been able to turn out before. The white brick are certainly making a hit in southern Georgia.

The King-Crown Plaster Co., Cedar Rapids, Iowa, are running their sand-lime brick plant all winter on account of the demands for their brick. It is necessary to break the ice to get the sand from the river. They have just ordered a 100-h. p. generator and a 50-h. p. motor to run sand pumps and are installing a complete electric light plant to light the works. They are over a 1,000,000 brick behind in their orders.

**SMOTHERED A CATAMOUNT IN BRICK KILN**

Levi H. Kissinger, proprietor of the Windsor Park Brick Works, on the outskirts of York, Pa., smothered to death a large catamount in a corner of a brick kiln after a fierce fight. He thought the creature a big tomcat and was "shooing" it out of a dark corner of the kiln, when it sprang at him.

Although the attack was unexpected, Mr. Kissinger threw the animal from him, and stripping off his coat, ran after it. He succeeded in wrapping the garment about the creature's head and held it tight until the struggles ceased.

It is thought the animal must have strayed in from the near-by hills for food. It weighed 18 pounds.

**CLAIMS C. & O. OVERCHARGED IN FREIGHT**

What will prove an important test case is a suit filed by Judge George M. Osborn for the Kentucky Fire Brick Co., at Portsmouth, O., against the C. & O. Railway, in Squire Shakespeare's court.

Suit is brought for \$56 alleged overcharges on freight on shipments of six carloads of brick from the company's plant at Haldeman, Ky., to the Tennessee Iron and Coal Co., at Ensley Ala.

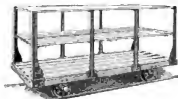
The C. & O. Railway has no scales at Haldeman, and the company has had to calculate shipments, the railway being governed by weight of same at Lexington, Ky. It is alleged that the shipments showed overweights of from a ton and a half to four tons each.

**BRICK FROM BRAZIL TO FRISCO**

Manager Harry Walters, of the Brazil, Ind., branch of the Hydraulic Pressed Brick Company, has received orders to begin shipping brick from the local plant to San Francisco, where brick of Brazil manufacture will go into the construction of the new Palace Hotel, which was destroyed by the recent earthquake. All of the facing brick in the new hotel, which is to be the finest building on the Pacific coast, will be made in this city. The number required is 1,250,000 and 125 cars will be necessary to carry them. All of the facing brick are to be shipped within sixty days. The brick are what are known as vitrified pressed brick, manufactured only in this city.

## The Lightest Running Dryer Car Made

having a dust proof roller bearing box made of steel. No oil needed.  
Write for description and prices



**Vulcan Iron Works** MASON CITY, IOWA

## MISCELLANEOUS ITEMS

The Lexington (Ky.) Brick Co. has been incorporated with \$35,000 capital stock.

J. W. Barlow of Shelbyville, Ind., is at the head of a movement to establish a tile factory at Henryville.

The new plant of the National Drain Tile Co. at Streator, Ill., will be ready to operate the middle of January.

The Algodones Pressed Brick & Tile Co.'s plant at Tonque, N. M., will be ready to operate by the first of the year.

I. C. Johnson, head of the Building Committee of the Oskaloosa (Ia.) Commercial Club, is trying to land a brick factory.

W. L. Birdsell has bought Geo. W. Fuhrman's interest in the Berthoud Brick Works and the firm is now Birdsell & Ferguson.

Contractor P. S. Phillips has started the work of constructing a new boiler house for the Hanover (O.) Red Pressed Brick Co.

The Mountville (Pa.) Brick Co. has shut down to install machinery for the manufacture of pressed brick. J. H. Minnick of York is the manager.

The Alpha Portland Cement Co. has voted to increase its capital stock from \$2,000,000 to \$6,000,000 to provide for present and future requirements.

The Ironton (O.) Portland Cement Co. has been sold to Toledo and Detroit capitalists, and a great merger of plants in Michigan and Ohio is to be formed.

J. T. Underwood of Springfield, Ill., has gone to Hernandez, Sonora, Mexico, to construct a large brick plant, introducing modern American machinery.

The Bangor (Maine) Brick Co. contemplate installing two steam machines to replace the old sand machines. This will materially increase the capacity of the yard.

The Tioga Red Brick Co., Ithaca, N. Y., has been incorporated with \$30,000 capital stock by George W. Cook and C. H. Chapman of Ithaca, N. Y., and S. Howard of Scranton, Pa.

The Amarillo (Texas) Press Brick & Tile Co. are now ready for the plant of the company, and the men are now at work getting the machinery into place. B. H. Lewis is the manager.

The Meadville (Miss.) Brick & Lumber Co. has been incorporated with \$25,000 capital stock by M. C. Bradley of Meadville, L. E. Schilling, E. C. Schilling, of Magnolia, and C. V. Ratliff of Summit.

Judge Evans at Fort Dodge Ia., has made permanent the temporary injunction restraining the city from furnishing the Plymouth Clay Products Co. free water and exempting it from taxes for 10 years, as the city council agreed.

The Florida Clay Co., Talaha, Fla., has commenced operations. The electric power plant recently put in to operation is doing excellent work. C. J. Dashiell, the manager has use for 100 more laborers to further develop the work.

The Montague City. (Mass.) Plumbum Carbon & Brick Co. has been incorporated with \$150,000 capital stock. C. P. Wise of Turners Falls is president, W. C. Davis of Readsboro, Vt., vice-president, and W. H. P. Gilmore of Turners Falls, secretary and treasurer.

I. J. Dickens has organized a company at Monticello, Ark., for the manufacture of drain tile.

Capitalists of Redwing, Minn., have secured an option on the Ft. Dodge (Ia.) Brick & Tile Works, same being given for \$80,000.

The new plant of the Niles (O.) Fire Brick Co., has been started again. At the old plant the men will also be put on so that it will be full-handed.

The Dewey Brick & Construction Co., York, Pa., whose plant burned causing a \$12,000 loss, was insured in ten companies to the amount of \$9,000.

Louis Vogel, of Weir, Kan., is looking up the methods of brick and tile manufacture with a view of working the seven-foot vein of fire clay on his land.

The Baltimore (Md.) Vitrified Clay Co., 22 Abell Bldg., will immediately rebuild their plant which was recently damaged to the extent of \$3,000 by fire.

The Findlay Clay Pot Co., Washington, Pa., which has been practically closed for several weeks, has put a force of men at work and later will double the capacity.

The manufacture of brick at the Prairie View (Texas) Normal and Industrial College will become a permanent feature of the school. About 50,000 brick are being made daily.

The Kaysville (Utah) Brick Co., which was capitalized at \$50,000, has been increased to \$100,000 and the daily capacity is 125,000 brick. Gustav Voeleker is the manager; 120 men are employed.

The Milldale (Conn.) Brick Works, which was bought from C. H. and H. H. Clark by Joseph Fontana, is to be operated by the late Mr. Fontana's partner as a settlement is being made with his estate.

The officials of the St. Louis Clay Industries talked shop at the Planter's Hotel the evening of the 12th. George A. Gamett, of the Laclede-Christy Clay Products Co., is secretary of the informal organization.

The Columbia Clay Co., Kennewick, Wash., is now making brick with a force of ten men and are at present burning brick for the purpose of building their permanent kilns. Afterwards they will make brick for the trade.

L. I. Hackett, superintendent of the Porter, Ind. yards of the Hydraulic Press Brick Co., has announced that the plant would resume operations the beginning of the year. Large orders were received and prospects are exceedingly bright for others.

## THE ANTON VOGT DOWN DRAFT KILN

For Sewer Pipe, Drain Tile, all kinds of Brick and hollow Building Material. Cheap and simple. Don't fail to investigate this Kiln, it delivers the goods. To purchasers of Plans and explicit instructions of how to build, set and burn Kiln my bureau of valuable practical information is FREE

ANTON VOGT, Ada, Okla., U. S. A.

Work on the foundations for the new tile works at New Salisbury, Ohio, has been commenced.

The Illinois Brick Co. has declared the customary quarterly dividend of 1 per cent, payable January 15, 1908.

The American Sewer Pipe Co. has declared the regular quarterly dividend of 1½ per cent on its capital stock, payable January 2, 1908.

Viola, Ill. may have a new industry using the red shale on the W. H. Riddell farm north-east of the town. A. Gillett, of Aledo, is to be interested in the industry.

J. F. Berry has organized a stock company to build a pressed brick plant at Mount Pleasant, Texas. Work will begin in a short time to build the sheds.

The Kenilworth Tile Co., Newell, W. Va., will enlarge its business. A change of management has been made as Claude Nease of East Liverpool, Ohio, has secured control.

T. M. Allbrook of Dellin, Iowa, and the Oskaloosa (Ia.) Commercial Club, expect to build a brick plant at Oskaloosa that will cost \$200,000 and employ 400 men the year around.

The Hydraulic Brick Co., Louisville, Ky., has been incorporated with \$350,000 capital stock, which is a transfer from a New Jersey company. The company has long been in existence.

Stephen Birch, proprietor of the North Dakota Tile Works at Fargo, has returned from Salt Lake City, Utah, where he has had contracts for over one million dollars' worth of work.

It is the intention of the Albert Lea (Minn.) Brick & Tile Co. to greatly enlarge their facilities next year so as to properly take care of their trade. Mr. Rushfield is president of the company.

The Bippus (Ind.) Tile Company will rebuild their plant, which recently burned to the ground, in the spring. Some of the farmers in the vicinity agreed to place orders and pay in advance for them.

The Queen Brick & Lime Co., Seattle, Wash., has been incorporated with \$75,000 capital stock. Incorporators are: M. F. Shaw, R. L. Lusby, G. B. Lazier, L. M. Presnall, H. C. Applegate and L. S. Treen.

The T. B. Townsend Brick & Contracting Co., Zanesville, Ohio, will increase the capacity of their already large plant soon after the new year. The managers are now making investigations with that purpose in view.

With eight gypsum mills located adjacent to Ft. Dodge, (Iowa) there is every evidence to believe that another will be erected within a very short time. The Ft. Dodge Gypsum Company are planning such a move to supply their trade.

The Utica Shale Pipe Co., St. Lambert, Que., has been incorporated with a capital of \$20,000, to manufacture brick, sewer pipe, earthenware, glassware, etc. The charter members include W. K. Lowden, St. Lambert, Que.; J. Rodger and W. M. Laurie, Montreal.

The Credit Valley Brick Co., Toronto, Ont., have been incorporated with a capital of \$50,000, to manufacture brick, sewer pipe, tile, pottery, etc. The provisional directors include W. Schumacher, Glen Williams, Ont.; G. A. Turner and W. B. Bentley, Toronto.

Brickmakers in New South Wales, Australia, earn about \$10 a week.

The Alonzo Curtis Brick Co., Grant Park, Ill., has closed down their factory until spring but are shipping out from 10 to 15 carloads of brick daily.

Oakville, Ontario, is asked to guarantee 5 per cent on a \$30,000 first mortgage bond to help establish a tile and electric conduit factory that will employ 50 hands at an outlay of \$123 daily for labor.

The Western Fire Clay Products Co., Ltd., is about to build a brick and sewerpipe works at Yellow Grass, Sask. Charles West, of Winnipeg, Manitoba, is interested. The company will employ 100 men.

Charles Hank, president of the International Brick, Tile & Terra Cotta Workers' Alliance, was arrested at Nelsonville, Ohio, in connection with a strike at a factory. Trespassing was charged against him.

Mr. M. C. Burke, of the Burke Brick Co., Ft. Smith, Ark., states that the plant will be started up again after the new year as they had sold some of the paving bonds and had prospects of disposing of many more.

The Pine Bluff (Ark.) Brick Co. will close the year with the satisfaction of having done the largest business in its history. They have been shut down to make repairs and will open up again with the new year.

The Great Kanawha Brick & Tile Co., Charleston, W. Va., has been organized with \$100,000 capital stock to buy, sell and deal in clay properties. The incorporators are: J. W. Jenkins, C. E. West, H. D. Rummell, U. Higginbottom and M. Lorberg.

**DIRECT HEAT**

# DRYERS

— FOR —

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**  
62-64 William St. NEW YORK CITY

## DUMP CARS FOR SALE

A few good, "Main Line" Dump Cars. Will be put to A-1 condition. Write for description. Detroit Car Building and Equipment Co. Detroit, Mich.

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled factories are offered complete or in part. Cheap. Have several Brewer Mills for sale and others.  
Engines, Boilers, Crushers Drying Pipes, etc. If you wish to buy or sell write

Brick and Tile Machinery  
Secor, Ill.

## FOR SALE

One power Repriss, in number one condition, used only but a short time; capacity 1000 per day. Ask for full particulars.  
American Enamelled Brick & Tile Co.  
1 Madison Ave. New York

## NOTICE

To American Clay Machinery Manufacturers—A sound proposition for N. W. Alberta. Co. Articles of Association have been signed for Hanson's Brick & Tile Co., Ltd., for \$2000 of 240 shares at \$100 each at par. To equip a complete brick making plant on field of 60 acres (present at all) fully-rolled by the Henry Martin Brick Machine Mfg. Co., of Pa. U. S. A., whose tests are satisfactory for a good sound brick.

The situation of the field is close to the Railway siding of Claymore, on the C. N. R. 6 miles from Vermilion City. The Bullseye of the famous Saskatchewan Valley, and the Vermilion district, where bricks are now selling at \$20 per thousand end in great demand at that.

We desire to correspond at once with any firm who will put a fully equipped up-to-date plant on the field, on an acceptance backed by fully paid up stock, who may recommend a capable manager, to engage himself with our company of salary agree upon. Address

ALEXANDER HADIN  
Pioneer Builder and Contractor  
Vermilion, Alta.  
Solicitor  
K. V. Fieldhouse, Esq., L. T. R.  
Vermilion, Alta.

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars. GREAT EASTERN CLAY CO.  
30 Cortland St., New York

## BRICK PLANT WANTED AT JACKSONVILLE

One of the best places in the whole country to establish a small up-to-date, modern Brick Plant. Local consumption 3,000,000 annually. Abundance of good clay. No competition. Will give detailed information upon application to the  
BURLINGTON MEN'S ASSOCIATION  
Jacksonville, Illinois

## POSITION WANTED

I have had twenty-two years' experience in fire clays, brick, hollow brick, building tile, gas refractories and settings. Understand making managers and silica brick; want position as superintendent.  
W. T. J., care Clay Record,  
Chicago, Ill.

## POSITION WANTED

Young man desires a position as Superintendent or sales manager, understanding stiff mud and dry press process. Has traveled all over.  
TRAVELER, care Clay Record,  
Chicago, Ill.

## FOR SALE

One No. 2 Potts & Co. Clay Disintegrator. Used only six months. Address  
C. SOLPISBERG 809NS  
Aurora, Illinois

## WANTED

12 offices covering entire brick, clay and building material field. Positions open for office sales and technical men. Service confidential. Write, stating age, experience and location desired.  
HAPGOOD, INC.  
120 Broadway, New York City,  
or 1010 Hartford Blvd., Chicago, Ill.

## BRICK YARD FOR SALE

Old established yard in good town of 5,500 people, with good country surrounding. 40 acres, good kilns and sheds. Good reason for selling. Call on or address  
CHARLES McNEAL  
Maryville, Mo.

## FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.  
THE ATLAS CAR & MFG. CO.,  
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 18, 16 and 20 pound. For price, address  
ATLAS CAR & MFG. CO.,  
Cleveland, Ohio.

## FOR SALE

Brick manufacturing plant, capacity 4000. Six mould dry, press, small planting mill, lumber yard. Good shipping territory and an established paying business.  
J. J. CARR OF CLAY RECORD  
Chicago, Illinois

## PLANT FOR SALE

A practically new brick and tile plant in north west Missouri for sale on account of health have decided to sell at about one-fourth cost. Soft mud and still mud machinery, engine, boilers and sheds for 1000 brick daily. Two Clay kilns and new kilns. Plant runs steadily and can't supply the demand at good prices.  
Write to J. WYNN  
Weldon, Iowa

## WANTED

A thoroughly competent and reliable Superintendent to manage a stiff mud brick plant at Columbia, Mo. Capacity 25,000 a day, output principally pavers.  
Must have A1 references, no other need apply. Address or reply in person.  
EDWARD BRUCE CO.,  
Columbia, Mo.

## PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address  
DENIS, care Clay Record,  
Chicago, Ill.

## FOR SALE

Second-hand presses of different sizes and makes. Good machines and low prices.  
THE FRISCHOLTZ, BRICK MACH. CO.  
Old Manchester Road  
St. Louis, Mo.



Four Jagers quired  
H. A. MART, 41 White St.

As built by J. J. W. W.  
\$1100.00  
4 Wheel, \$3.00  
8 Wheel, \$3.25  
Discharge  
Sold by all dealers  
BATTLE CREEK, MICH.

## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desirous that every interest in the company. SUPERINTENDENT  
Cite Clay Record Chicago, Ill.

## CARS WANTED

WANTED—Second hand cars and trucks. Give lowest price and condition in first letter.  
Box 81.  
Independence, Iowa

## PALLETES FOR SALE

We have a large number of second-hand wood pallets, size 34 by 10 inches. Can be bought cheap. Address.  
MARTIN  
Box 987  
Lan center, Pa.

## POSITION WANTED

Position as Superintendent or Manager of Paving Brick Plant, thoroughly competent to take charge of construction and operating in every detail. Have good position at present, but dislike position. Address  
PATRIC, care of CLAY RECORD  
Chicago, Illinois

## FOR SALE

A 9-foot American Clay Machinery Co. Dry Pan in first-class condition. Will sell cheap to avoid moving.  
SMITH BRICK COMPANY,  
Omaha, Neb.

## ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.  
700 Chamber of Commerce,  
Astoria, Oregon

## BRICK YARD FOR SALE

Owing to death of owner, estate will dispose of only brick made in railway town of 6,000 in Central Illinois. Thirteen acres inexclusive clay and water supply. Just outside of corporate limits, on main road and adjoining Railroad yards. Will sell cheap.  
Address G. E. B., care Clay Record,  
Chicago, Ill.

## SHALE CLAY FOR SALE

Have bed of red, chocolate and blue shales exposed full length of 3,500-foot railway cut and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow block, brick, paving block, tile, sewer pipe. On river. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Urban Railway Co.  
Des Moines, Iowa.

# CLAY RECORD

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## REPORT OF THE THIRTIETH ANNUAL MEETING OF THE ILLINOIS CLAY MANUFACTURERS' ASSOCIATION FIRST SESSION

The Thirtieth annual meeting of the Illinois Clay Manufacturers' Association was held at Peoria, January 14, 15 and 16. The members made the National Hotel their headquar-

The officers of the association were complimented time and again being able to present such a high class program, and the authors or writers of the papers were given a vote of thanks in many instances and in each case the vote of thanks was an unanimous one.

The morning of Tuesday, the 14th, was devoted to the enrollment of members and the time honored custom of renewing old acquaintances and forming new ones, examining samples of ware, etc. The exhibit tables were well filled



PHOTOGRAPH OF PARTIAL MEMBERSHIP OF ILLINOIS CLAY MANUFACTURERS' ASSOCIATION TAKEN FROM PEORIA COURT HOUSE STEPS

ters and the meetings were held in the Assembly Hall in that hotel. The attendance was the largest in the history of the organization with the single exception of the year 1906. The papers and the discussions were of exceptionally high character, as our readers will see by reading the complete report.

with samples and descriptive matter on clay machinery.

President Pratt called the first session to order on Tuesday afternoon and presented Hon. Thomas O'Connor, who was received with much applause. The mayor of Peoria made the address of welcome.

## ADDRESS OF WELCOME

Mr. Chairman and Gentlemen: I assure you that it is a pleasure to me to come here this afternoon and extend a few words of welcome to the members of this organization. This is an age of organization. The business men of our country today have come to realize that it is a necessity to organize for the protection of their business, for the protection of their members from unjust and injurious competition, and to help and assist one another as occasion requires; to attach a faithful adherence to duty. Organization has done a great deal for the people of our country. Organization has done a great deal for the laboring men of this country. All branches of honorable toil now-a-days are organized into some body or another. They have an object in joining those organizations. You men have an object in affiliating yourselves with the organization that you belong to. If organization did no more for you, the clay workers of the state of Illinois, than to bring you together here in this meeting, you have accomplished a great deal.

We, as business men, sometimes are selfish. We stay at home. We strive and work day in and day out trying to accomplish and advance our business interests. We do not seem to have the time to go out and mingle with men who are in the same business. We do not seem to have time to go out and become acquainted with our neighbors—we, men who are in competition with others on every day. This, I believe, is a mistake. That competition is the life of trade is a true saying. That should not deprive us, however, of being friendly with one another. Life is too short to be selfish. There is work and business enough in this great country of ours for us all, and if we will go out on the street and look for it, we will be successful.

Organization, as I say, has an object. You would not be here today unless you expected to derive some benefit from this meeting. You will have papers read here and matters discussed that will be of interest to each and all of you in your particular branch of the business which you represent. When you go back home you will possibly make some change in your business. Some argument will be used here that will give you a new inspiration, a new idea of transacting the business that you are engaged in.

Up until an hour ago I knew nothing of this convention being here. I am not prepared at this time to go into any lengthy talk to you, I do not believe you want that.

The city of Peoria is the Convention City of the middle west. We have the name and the reputation of being hospitable people here in this city. I want you while you are here to have a pleasant time. I trust that your visit here will be pleasant. I only wish that it might have come at some opportune time, when we might have the pleasure of showing you our parks and our city in general. Nature has done a great deal for the city of Peoria, and I only wish that you were here in the summer months when we might take you for a ride through our various parks.

I trust that your deliberations here will be of much benefit to your organization. I trust that your deliberations here will mean much to each and every member of the organization. I want you, while you are here, to feel that the city belongs to you. Go where you will, you will always find a welcome. The keys of the city are in the office of the National Hotel, in charge of Mr. Townsend. Get them when you go out, and when you leave our city, take them with you and whenever you return to Peoria you will have a key to every institution in our city.

Now, in conclusion, in the name of the city of Peoria and its 80,000 people, I bid you a hearty welcome. I thank you. (Continued applause.)

Before President Pratt made his address, he spoke briefly in response to Mayor O'Connor's words of welcome.

## RESPONSE TO ADDRESS OF WELCOME

We have just been welcomed to the city of Peoria, the second metropolis of the state. I am very sure that we highly appreciate the many privileges just extended to us so kindly and generously by the Hon. Mr. O'Connor and assure him that the members of our association join in a hearty and cordial response to the City's call and greeting. We will be careful not to carry away anything smaller than a street car or business block. We thank you. (Applause.)

## PRESIDENT'S ADDRESS

Members of the Illinois Clay Workers Association here assembled, Ladies and Gentlemen: Another year has passed and we have met together again to-day to hold this the Thirtieth Annual Convention of this Association.

It affords me much pleasure to be among you and see so many familiar faces, and to greet the ones who are meeting with us for the first time. We sincerely hope that it will be time well spent both socially and intellectually.

Now that we are here it behooves each one to make himself at home and to try and make his stay here as helpful as possible to himself and others, and he should not hesitate to call on any one to help him out of any difficulty that he may be experiencing. It is altogether probable that from our program he may get many thoughts of value that were not before thought of as bearing on his case.

1907 as a whole, has been, I think, a very satisfactory year for the use of all clay products. It may be that the financial situation which showed itself early in the fall may have cut short some minor improvements, both commercial and municipal. We may experience a more backward tendency for the coming spring contracts but it is hoped not.

It is very gratifying to know that our clay products are coming more and more to be recognized, as the standard material for street paving, and sewer building, sky scrapers are calling for building materials which are durable and ornamental, fire and frost proof.

Again I feel that the farm drainage proposition will never be successfully accomplished only by the use of burned clay ware such as are in use at present with a steadily improving quality.

Some there are who will wonder if the speaker is keeping in touch with the inroads that our cement advocates and manufacturers are making now-a-days. To which I will say, yes, and as for my proof I look to the attempted construction and failure in many instances of buildings and consequent loss of life; of where they have built massive smoke stacks in many cities and are now tearing them down and where the workman hustled to point of safety before they fell; of where they have constructed abutments to support the bridge of our great railroad systems and are now being rejected for future use because they have not made good; and of where we see large and small drainage contracts supplied with their products only to find in future days that something is wrong somewhere and will have to be relaid by the reliable clay products.

Just a word if you please, as to our cement brothers. They are constantly conducting experiments to solve the cause of failure in their products, and will, no doubt, overcome many of them. Likewise the clay manufacturer must keep studying so as to keep abreast of the times and demands being placed upon his product, so that they may not be found wanting.

The manner in which we are to accomplish this is the next question. Allow me to suggest a few avenues through which some of this may be done. Adhere to the practice of trying to solve many little things pertaining to the handling of your machinery yourself for thereby you become more familiar with the details of your plant and its operation and then you will be more capable of appreciating points brought

to us by the trade journals, and as the problems resolve themselves into more of a scientific nature, such as the behavior of your clays during the drying and burning, maybe they crack and scum, fuse and bloat, or discolor, and then coming to the economical operation of your kilns you find you do not get a proportionate amount of fuel consumption to the amount of clay burned, and just then apply to our School of Ceramics at our University at Champaign and there we find a corps of instructors who can and will make your pathway if possible much more easily trod, and tell you in a way that he who reads and listens may easily understand. Gentlemen, I speak from experience.

As we have a lengthy program to follow and many valuable papers, I do not deem it wise to deliberate further. I trust that you all may have a very profitable time. Attend all sessions if possible, for the good of yourself and others. If I can be of any service to you, just push the button. I thank you. (Applause.)

Prof. C. W. Rolfe's paper on "The Ceramic Department of the University of Illinois and What it is Trying to Do" was next on the program, but the president announced that the professor could not be present until Wednesday and that being the case he was going to resort to the papers that would have to be read owing to the fact that some of the writers had not come with the papers. The paper prepared by Mr. William Simpson, of Chicago, was then read.

#### THE VALUE OF AN ECONOMICAL POWER PLANT

Mr. President and Gentlemen: Without doubt the greatest need of the day to all clay-working enterprises is economy, especially in cost of production. This question, as you all know, has been discussed repeatedly at these conventions with a view of economizing in the handling of material, burning, drying, etc., but the great diversity in product, raw material and general conditions, has proven that our neighbor's method must, as a rule, be radically changed to show equally good results for ourselves. This, however, is not true of the power plant, and in these discussions not enough consideration has been given to this subject, which is without question the heart of your plant.

A little more study and intelligent attention to this part of your yard will bring convincing evidence of the value of an economical and efficient power plant. Too often, first cost is the only consideration when new machinery of any kind is to be purchased. This is particularly true of engines and boilers which should be of the highest possible class, consistent with varied conditions and means at your disposal. In practice the question resolves itself to one of fuel consumption, and when we consider that this item increases or decreases in exact proportion to steam consumption, the value of an economical prime mover will be appreciated.

As an instance, let us compare two engines each developing 100 indicated horse power, one consuming 27 pounds of steam per indicated horse power per hour and the other 40 pounds. We will assume that coal is costing \$2.00 per ton and that you are operating approximately 200 days a year of ten hours each. Under fairly good conditions, with average coal, a boiler, hand fired, should evaporate from five to eight pounds of water per pound of coal. In our calculations, we will use  $6\frac{1}{2}$  pounds of water as an average. On a basis of these figures, the engine consuming 27 pounds per horse power per hour, would require 27,000 pounds of water to develop 100 horse power for ten hours, while the unit consuming 40 pounds would require 40,000 pounds of water to develop the same horse power for the same length of time. The saving effected by the use of the more economical engine would therefore be 13,000 pounds of water in ten hours, or 2,000 pounds of coal when figured with an evaporative capacity of  $6\frac{1}{2}$  pounds of water to the pound of coal. At

\$2.00 per ton this would mean a saving of \$400.00 in 200 days. This amount saved is 20 per cent on \$2,000.00, an amount more than sufficient to pay the higher first cost of the better engine, also its installation. This estimate is conservative and based on actual results obtained in many plants. The higher grade engine, in addition to its economical features, is stronger and better built; will last longer and give better satisfaction in every way. It will have better speed regulation, although this latter point is not, as a rule, important in operating brick machinery, unless electrical units are operated in connection. In modern practice the Corliss engine has always been considered the standard of economical engine performance and there are many reasons why this type of prime mover is more efficient than other classes. A discussion of these points at this time would require too much of your time.

In considering boilers, the return tubular seems to be the most popular type, and justly so on account of its adaptability to small plants; its reliability, simple construction and the ease with which it is handled. Under the same working conditions it is fully as economical as a water tube boiler and its first cost much less. Any insurance company, accepting boiler risks, will not hesitate to issue a policy on a boiler of this kind, permitting a working pressure of 125 to 150 pounds, provided boiler is of the butt joint and triple riveted type. In this boiler the longitudinal seams are triple riveted with butt joints instead of double riveted laps joints, as in the cheaper class of boiler intended for lower pressures. In both cases, however, circumferential seams are usually single riveted. It is not advisable to use a dome in any case, experience having proved that it detracts rather than adds to the efficiency of the boiler. Above all things the boiler should be properly made of good material. The average man has little conception of the enormous amount of stored explosive energy in a steam generator. Prof. R. H. Thurston states that a boiler rated at 60 horse power, under a working pressure of 75 pounds, contains 52,000,000 foot pounds of energy which is enough to drive it about one mile into the air with an initial velocity of nearly 600 feet per second. In view of this fact, is it any wonder that poorly constructed or neglected boilers will occasionally explode?

No power plant, however small, should be without a good open feed water heater. The value of this apparatus cannot be exaggerated. Not only does it effect a saving in fuel by supplying water to the boiler at a temperature of 204 to 210 degrees, but it also adds to the life of the boiler by purifying the feed water of the majority of scale forming impurities, such as carbonate of lime, magnesia, etc. Water containing sulphates cannot be purified by the heat of exhaust steam, these properties requiring about 350 degrees to remove. It is usually necessary to treat water of this kind chemically.

There are many auxiliary devices on the market for use in power plants, all of them designed to assist in reducing the cost of operating and increasing the efficiency. Some are well worth considering, while the claims made for others are too absurd to warrant serious consideration. A good oil separator is always valuable as is also a steam separator. And don't forget an oil filter. It will surprise you how much money this small apparatus will save and its first cost is very little.

We must not forget the producer gas engine proposition. Great strides have been made during the past few years in the development of this type of engine and also in the necessary gas producer. Big claims are made for it and perhaps under ideal conditions they can be fulfilled, but for average working conditions it has not yet reached a stage of perfection that would justify a comparison with a good up-to-date steam outfit. Manufacturers of this class of power equipment are guaranteeing to develop a horse power per hour on



one pound of coal and in some instances less than this. A Corliss engine running non-condensing with 100 pounds working pressure will require from  $3\frac{1}{4}$  to 4 pounds of coal per indicated horse power per hour. Such a great difference in fuel consumption is, of course, worth considering, but for the present it will be well to let the other fellow do the experimenting. Their value on a brick yard would be doubtful on account of the great variety of uses to which steam is put. Even with a gas engine, it would be necessary to install a boiler to supply steam for other parts of the plant other than the power house. A gas engine has been justly compared to a Georgia mule; it is all right with a light load, but apt to balk when you need them most and the load is heavy.

The greater cost of a high grade engine and boiler is fully justified and will help you along toward more economical production as much as any other part of your yard. They must be kept in good condition, however, or their value as a money saving adjunct to your plant will soon depreciate. The value of every machine you own is in direct ratio to its earning capacity and a close study of details and conditions under which you are operating, with careful attention to the same, will go far toward increasing the efficiency of your entire outfit. It will also stunt the growth of that eye sore to all clay-works; the brick yard scrap pile. Men in charge of machinery, especially engineers, are, as a rule, entirely too handy with a monkey wrench and imagine many adjustments to be necessary. A good modern engine is usually erected and started by a man from the factory and before he leaves it, everything should be perfectly adjusted and running true. If trouble occurs and adjustments are necessary, be sure you know what is wrong before attempting to right matters. Too much guess work has ruined many a good engine and ever after the engineer at fault has condemned that particular make of engine. Prejudices of this kind have cost the engine manufacturers many dollars to overcome. The same is true of nearly all machinery.

When you have time it would be well to devise some means of finding out the exact cost of maintaining your power plant. This part of your yard is a constant source of expense that can be materially reduced if proper attention be given to it. An investigation will show room for improvement and any money spent on bettering conditions will bring substantial returns. From time to time you are all adding machinery and devices for the purpose of increasing capacity or reducing cost in some way, but very few have ever given serious consideration to the amount of good dollars that are daily being wasted in the power plant. A change in piping, grates, or even kind of coal may cause wonders. It will pay you to look into this matter and an economical power plant will bring as good returns on the investment as any other part of your plant.

President Pratt: Gentlemen, I think that we can give Mr. Simpson a vote of thanks for his paper. I think that he has brought out a good many substantial and profitable subjects, and it seems to me that every one of us, clay workers and otherwise, should get some good benefits from a discussion of this. I should like to hear you express yourselves in regard to it. I will ask if any one here has had experience with producer gas? If they can do what they say they can, they can do much. I have had the fever myself—to the extent of investigations. I would like here to ask if anyone has had the gasoline engine proposition in use. You probably all know that.

Mr. Purington: I agree with Mr. Simpson in regard to the gas producing engine from the fact that the coals in this neighborhood are not fit for gas. We have demonstrated that pretty thoroughly in our experiments in making gas to make bricks. I do not think that we could "monkey" with it with Illinois coal.

Mr. Barr: I do not know very much about the subject, but my understanding is that where they have had success with the gas producing engine is where they have anthracite coal, or when it is in connection with steel works where they have waste gas; it is not a success with the coal we have here.

Mr. M. W. Blair: I always judged that the producer gas engine was an experiment in a great measure and I have never paid much attention to it. If we could run the engine with steam, it would be better. The labor was easily trained and easily obtained, and it would scarcely pay to fool with the producer gas engine at this time in its experimental stage.

Mr. Hammerschmidt: My neighbor pumps water three miles from springs, and they put producer gas in last spring. They reduced their fuel, but they had to get four different kinds of coal before they could make it work. They got the wrong kind of coal once and the thing went up in smoke.

President Pratt: My investigation in the producer gas proposition was about all that I felt that I ought to undertake. I want to cite an instance that comes to mind. I was investigating a certain make of engine and producer and I went with one of the manufacturer's representatives to a plant on the west side in Chicago. It happened to be the noon hour and the representative explained that things were not running at that time as the men were eating dinner. Pretty soon he introduced me to the superintendent and told him that we were out to investigate the producer. That superintendent kind of "wiggled" a little. Pretty soon he got the representative behind the desk and got talking confidentially, and I found out that the engine was out of repair. Finally the man came back to me and said that the deal was off; he wouldn't talk producer gas any more. But he volunteered to take me to the engine and show me what the machine looked like, and incidentally we found out the trouble with the engine.

Then I visited another plant at Beloit, one of the manufacturers. We had been talking very nicely and everything was working right. I asked him to return to the engine, for some reason. But when we got there it evidently had received a shock from our appearance and commenced to die. With the assistance of the local superintendent they revived the machine in time to prevent an entire stoppage. That was the sum and substance of my two visits. I thought if that was the way they would work in our brick yard, I didn't want them until they knew more about them.

I think that we can talk to advantage for some minutes now on the relative economy of the Corliss and the slide valve engine.

Mr. Wheat: I looked at it pretty carefully before we installed our power plant a few years ago, and my brother considered that the Corliss engine would give us ample power for our work because it was the most economical in running. In talking with an experienced clay worker my brother told him what kind of a power plant he had put in. That clayworker said, "I think you put too much money in your engine—it cost too much." My brother asked, "How much power do you get from your engine?" He answered, "I get about 90 horse power; I would like to get a little bit more." My brother asked, "How much coal do you burn to run your plant a complete day?" (He was running a steam dryer as well.) He said he was burning about six tons of coal a day. "How much did you pay for your engine?" my brother asked. That cost the clay worker about a thousand dollars less than our plant did. He was then asked how long his engine would run before he had to put in a new one, and he said that he had it for about four years and it would last five or six more, making it about ten or eleven altogether.

When we figured on our engine and what we had been doing, we said, we have 100 to 150 horse power if we want

it; we are not limited for lack of power on any particular machinery that we want to put in; and we burn about two and a half or three tons of coal a day. At \$2 a ton, that makes in the neighborhood of \$5. But he could use a cheaper man to run his engine. He could get a man to run his engine for \$40 a month and we paid \$60. Our engine would last 20 or 25 years. You discount \$5 a day for 200 days and you pay the difference in the price.

There is a draw-back in this Corliss engine in some brick lines. We found that while the Corliss engine gave a big advantage over the slide valve engine, in most cases they did not seem to be so popular in clay works in general, and we found that the real reason was that the average engine in clay works was not kept in a clean place. It is frequently kept in the same room with other machinery and subject to all the dust that comes. A Corliss engine won't stand that like a slide valve engine. It has got to be taken care of. If you get a good engineer to run one, he is likely to be cranky about getting the engine room dirty. Our experience with the Corliss engine is that we found it very satisfactory.

Mr. Walter: Ever anyone had experience with the four valve automatic engine, like the Atlas? It is on the Corliss style. My engine was getting out of order and the engine people wanted to trade my engine and give me an Atlas, I to give a thousand dollars in addition. But I was afraid that I did not have a clean enough place. If any one has had experience with a 4-valve engine I would like to know it, because they claim that it will save 20% to 25% on fuel.

Mr. M. W. Blair: The objection to the Corliss engine is on account of its slow speed. It is possible to run a 4-valve engine at a higher speed than it is a single wrist plate Corliss engine and get practically the same economy with the 4-valve engine that is obtained with the Corliss engine. Really the only advantage in the 4-valve engine is the fact that you can run it at a higher speed than you can the Corliss engine. They may have found some other claims for it after it was put on the market.

In response to the President's question as to the difference. The value motion of the Corliss engine is rather a problem of design and difficult to explain, but the motion of the parts are such that it cuts off automatically when the normal speed is reached you get the valve motion from the wrist plate. That problem goes into the machine design of the engine. That is one of those things that you get rusty on pretty rapidly.

President Pratt: I think that the point that I asked, and the reason, is not quite clear yet. I would like to hear a little further discussion of the matter. I think that the real reason why the automatic engine, the 4-valve, is allowed to run faster is simply because of the detachable motion, and the Corliss engine cannot pick up its valve and run over that limited speed. I think that is the real reason why they put the four-valve automatic on the market. This four-valve proposition, I think, is going to be brought up to all of us. I know it has been up to me. A representative came all the way from Chicago to figure that with us, and we figured out the actual saving of the engine would be about \$15 a year in my case as I was now running, with his proposition, and that it would cost me about \$450 to make the change; so I concluded that I would keep what I had.

Can any of our members give us an explanation of the difference in water tube and the return tube boiler?

Mr. Walter: The horizontal tubular boiler is the best boiler that can be put in. The only question is can we get a better way of burning up the coal? The only trouble in most tile factories and brick factories is that so much coal goes up in smoke, and if we had a better way of burning the coal without so much expense, so that we could use every bit of the coal, it would be the best plan. I would like some

way of burning the coal more economically, and also to arrange the water, for wherever you have a scale you lose power. May be somebody knows of a way of keeping the scale out.

Mr. Hammerschmidt: I think that we use as hard water as any one in the country. We have had trouble with our boilers and scale. We have at last put in a pan heater. I have forgotten the name—it is made in Chicago—and use soda ash to a certain extent and we have eliminated our scale very much. After washing our boiler every two weeks we have found hardly any scale at all. Every day we put a handful or two in the water. We clean our pans every Sunday and they are about an inch thick with scale.

Mr. Purington: When you speak of a "handful," I suppose that would be about two handfuls of an ordinary sized man. (Laughter.)

President Pratt: Do you think that the heater has anything to do with keeping your boilers clean?

Mr. Hammerschmidt: Yes. Of course we bought that heater secondhand, out of an electric light plant. It is a 400-horse power. Most heaters are bought too small. Those pans are seven or eight feet long. The water goes in on top and the steam runs through the hole and it is separated at one end. That was a good investment. We have four boilers.

Mr. Walter: Can you use the exhaust steam the same as you did before?

Mr. Hammerschmidt: Yes, Sir.

Mr. Purington: We have several boilers of different makes. But we are putting in tubular boilers entirely, largely on account of the water. If we have first class water with very little scale, a tubular boiler is the most economical boiler made. We filter our water through sand and gravel and introduce lime, and we usually have had good results with the filter plants since we put them in. I think that the tubular boiler is the most economical that can be put in.

Mr. Walter: What kind of filter do you use and how it is made?

Mr. Purington: There are two tanks, one of them containing soda ash and the other lime, which are operated by the force of the water motor that is operated as the water passes through. If you use more water in the boiler, you force through more soda and lime. Then the water goes into a cylinder and from there it is forced through two tanks, about 6x6 ft., with gravel at the bottom and fine stone at the top. It is forced through two because we want more capacity. Every day we reverse that water and force the water the other way, washing out the clots at the bottom where they settle from force of gravity. There are a great many different filter plants made. This is what is called the Pittsburg and we are very well pleased with it. In answer to a question Mr. Purington said that they did not have to re-charge the filters.

Mr. M. W. Blair: In putting in a Corliss engine, very often an engine is installed too light. It would be difficult to tear out that engine and put in a heavier engine. But often that load can be accommodated, at a future time, by providing the engine with double eccentrics. Very often you can increase the load on the engine 25% or 30% over its rating simply by having double eccentrics on the engine, and very often the Corliss engine that is already installed can have that and so increase the load and leave the same engine to do the work.

Mr. Purington: Why don't the engine manufacturers put on double eccentrics? They will all do that at additional cost, but why don't they do it? Do you know?

Mr. M. W. Blair: No, I don't. Nobody claimed that it is an economical proposition, but it may overcome the putting in of a new engine. That is the only excuse that I

would have for putting on double eccentrics; that it would overcome the putting in of a new engine and stopping your plant sixty days to put it in.

Mr. Hammerschmidt: I have been investigating new boilers and putting in new boilers and have talked with the Hartford Boiler Insurance Co. I think that every one who puts in a boiler should not stop at the cost. Mr. Forbes, of the Hartford Boiler Insurance Co., told me that that Company had not one, made in the last six or eight years, that had not been successful. It is a tubular boiler, and they can carry 125 to 150 lbs. of steam easier than with an ordinary boiler.

President Pratt: That introduces a new subject. I think this is an educational feature and well worth our time, although we don't want to work too hard. Mr. Hammerschmidt has called that point up and I presume that somebody would like to know why the butt joint is stronger than the other. Mr. Simpson means, in the paper, where the two boiler plates in reaching together are not bent over and lapped, and in that way riveting the two ends of the steam plate together, but they come edge to edge and then there is a plate laid over them on both outside and inside and boiler sheet is rolled to a perfect circle. In that way triple riveting of the seams we approach practically the initial tensile strength of the plate and in that way get our highest pressure.

I would like to ask about one point, in regard to feed water heaters. Which is the more economical, the open or the closed type, as they are commonly called?

Mr. Haeger: I do not know anything about the open type. We have two but they are both closed type. We have another kind, more of the open type, in which we put hay, in order to separate the impurities from the water. I know that the closed type work very nicely and very economically. The closed type is my preference.

Mr. Wheat: I am not an authority, but in regard to our feed water heater we found that the closed type were generally being taken out and the open type adopted. With the open type it is only a matter of a few moments work to clean it. But the closed one is a good deal like the patent medicine. You may dope your system with patent medicines and not strike the right disease. Water varies almost as much as the diseases of the human system, and in order to provide the proper boiler compound to get results, unless you know what your water is, is a pretty good plan to have the water analyzed. There are some companies that put out boiler compounds who will first take the water that you use in your boilers and analyze it to find out what is best needed, and then guarantee certain results.

President Pratt: I think that one difference between the closed and the open heater is that when you use the open heater you save a part of the steam as it goes back to the boiler in a condensed form; and the open heater is easier cleaned.

President Pratt: The next paper that we will read is on the subject "How you can increase profits and lessen labor troubles by incorporating" by W. W. Phillips, Bowling Green, Ky.

#### HOW YOU COULD INCREASE PROFITS AND LESSEN LABOR TROUBLES BY INCORPORATING

Some weeks ago I was unexpectedly honored by a request from the secretary of this association, Mr. Hartwell, for a paper on the subject of corporations.

It is a many sided and important subject, requiring study and much thought to understand it. If I make clear the advantages of incorporating, I will have accomplished my purpose.

There has been much wild talk and indiscreet legislation against large corporations which has landed us in the middle of one of the most remarkable panics in history. On this

account, it will probably be difficult to finance an enterprise for some time to come, but when the boom starts again, lose no time, incorporate. In the words of the immortal poet:

"There is a tide in the affairs of men,  
Which taken at the flood, leads on to fortune;  
Omitted, all the voyage of their life  
Is bound in shallows and in miseries."

Professor W. G. Sumner of Yale, says: "The President of the United States has made himself foremost in denouncing capitalists and captains of industry as corrupt and dishonorable managers of the interests under their control. He has declared that he means to use all his legal powers to the utmost to punish the wrongdoers. As a consequence of the laws mentioned and the executive will which has been expressed, it has been a fact that for two years past, new attempts to raise capital, by any of the most approved methods, have met with difficulty and unwilling response due to timidity.

The ethical and political interference would not have been very important, if the situation had not been critical. There is an increased production of gold, and an advance in prices, the effects of which cannot be ignored. Wages have advanced very seriously, and the demands of laborers have been increased. These changes affect the profits of industry and the outlook of new enterprises. They increase the timidity of petty investors and they present problems which are real."

Professor Sumner's view is supported by the greatest statesmen. It is to be hoped that our legislators will see the folly of legislating against corporations and repeal some of the dangerous laws that have recently been enacted. In an advanced society, corporations are as necessary to industrial growth, as the stomach is to the human body. Statistics prove this statement. Since 1870, a brief period of 37 years, the wealth of the United States has increased more than it did from the days of the flood up to the year 1870.

Daniel Webster once said: "The attack upon rich and exclusive corporations is idle and delusive."

Corporations are objected to because; 1st, wherever great corporations are found, there is great poverty; and 2nd, because it gives the captains of industry a better opportunity to swindle the people.

As to the first objection, no investigator has ever discovered a place where all men are on a level, except where they were barbarians and on the verge of starvation.

The second objection has the ring of truth in it. Corporations give powerful men an opportunity to do things harmful to society. So do all good things. Religion for instance, and marriage.

On the other hand, society has often abused private individuals for no other reason than "because they were rich." Robert Morris saved the liberties of this land, and for his services was sent to a debtors prison.

I have taken up considerable time without coming to the subject. No one knows how much of the one hundred billion dollars of wealth of the United States is invested in industrial and railroad corporations. But we all know that the great financier always incorporates regardless of laws and hostile public sentiment. This fact alone is a recommendation.

Consolidation is the spirit of the age. It can't be prevented. England tried it, and gave it up. Parliament said it could not prevent consolidations.

There are hundreds of brickmakers today interested in partnerships, or they own the entire business. This is bad. Marshall, the Great, once said: "One bad general, is better than two good ones." The same may be said of partnerships. There are too many bosses, usually. One man often has a sufficient understanding of a business to make a success of it, but has not the capital necessary. To illustrate: In

1872 oil was selling at 23½ cents per gallon, and the refiners were losing money. The output was 248,000,000 gallons. The refiners combined, there was a great saving in transportation. The company owns 25,000 miles of pipe line. These pipes deliver one and one quarter millions of gallons of oil in New York every day. The tanks, pipes, vessel, and cars cost about \$50,000,000. Without this aggregation of capital the system would be impossible. The oil company, The Standard, has made money, more perhaps than any other company in the world, but not at the expense of the public.

A corporation has another advantage. There are usually a large number of stockholders with influence and brains, to say nothing of their financial assistance.

A corporation in Southern Kentucky deserves notice.

In 1898 there were two small brickyards in the town, neither incorporated, both making brick by hand and the proprietors of each rated from \$5,000.00 to \$10,000.00. One of the proprietors decided to form a corporation. In due time a well equipped brickyard with good machinery, drier, and up-to-date kilns, was in operation. Through the influence of two stockholders, brick sidewalks were ordered, and a quarter mile of brick street. A director in this company, who was also a large stockholder, was a director in a bank, it was therefore easier to borrow money. Other directors and stockholders used their influence in various ways so that the corporation did all the business. In two years, the owner of the other brickyard went West. Since then there has been no competition in the corporation's home town, but it is competing successfully with out-of-town firms. They are now making more brick and better brick than ever before, and a great deal more money.

It is very important to have men of influence in your company, even if you have to offer them special inducements.

Labor troubles will naturally be very much lessened. Did you ever hear of the Standard's men going on a strike? The United States Steel Corporation had booked some big orders, the workmen struck. They thought that the corporation would come to their terms to prevent a greater loss, but they were mistaken. What they did do was this; they turned their orders over to some other companies, and let their men fast until they grew tired of their employment. The result was unfavorable to the laborers. I do not believe that the man who works in the broiling heat of the sun, should be oppressed. Indeed I always feel sorry for the man who is cursed by a brutal foreman, who is ill-fed, ragged, and who often lives in a filthy cabin with a few dogs and people, and a bare floor for a bed, but it is, I know, as a rule their own fault that they are in the condition that they are.

Often it is not their fault, but their misfortune. 'Tisn't the employers fault that the laborer has no brains, nor can the employer be blamed because the laborer drinks or gambles; but it is his fault if he allows strikes, because he can prevent it to a great extent. Often if more money was invested, better labor could be obtained and as it would give steadier employment to the men, they would give less trouble.

It is useless to expect to satisfy laborers, or any other class of people, but if we make ourselves stronger, we can control them. As it is the duty of the employer to do mental work, so it is his duty to do all in his power to better the laborer's condition. His condition can be bettered by cheaper production of the necessities and luxuries of life. We have it in our power to cheapen the production of clay-ware. Let's do it. We need the money.

We can't do big things on a small scale, if we want to do big things, we must enlarge. Let's start something.

President Pratt: We will next take up the paper "Fuel Consumption in Burning Brick and Tile," by Anton Vogt, of Ada, Okla.

#### FUEL CONSUMPTION, BURNING BRICK IN UPDRAFT-KILNS

Mr. Chairman and Gentlemen of the Convention: I have been requested by your secretary to write a paper on Fuel Consumption, Burning Brick in Up-Draft-Kilns, and also invited to be present at the 30th annual meeting at Peoria, Ill. I regret that I cannot attend this year for several reasons best known to myself and of no special interest to the members of the convention. In regard of writing a paper on the subject before mentioned I take pleasure in presenting to the honorable body of the Illinois Clay Workers' Association part of what little I know, for, what I don't know would make a book of many pages and I venture to say, we will never be able to fully understand and solve all the puzzles and tricks that Mother Nature has put in clay. We are just beginning to realize what fools we mortals were only a few years ago and most of us were only guessing or imagining that we were on the right track and later awakened to the bitterness of the horrible truth that we were all wrong and smilingly and delighted we must ask Prof. Orton, principal of the first clay school in America. Prof. Ries, Bleininger and others, too numerous to mention, to accept our thanks from the bottom of our hearts for the good they have accomplished for the struggling clay workers on the rough sea of inexperience in this land of the brave and free, in the most blessed and prosperous country on the face of the earth, where the working man is better paid, better fed and better clothed and better housed than his brother workman in any other country.

To begin with the subject, I will do my best to deal with the task in a plain, practical manner and although your secretary stated in his request, that there was no pay for this, I feel that I will be fully rewarded if some of you are benefited by it.

#### FUEL CONSUMPTION IN BURNING BUILDING BRICK IN UP-DRAFT-KILNS.

Whatever the fuel may be, wood, coal, oil, or gas, we must know how to make the most heat with the least quantity of fuel in the shortest possible time, for time is money.

How can we accomplish this? By a proper system of firing and draft.

#### SUPPOSIN'!

We have an up draft kiln with temporary or permanent furnaces and walls. To use fuel of any kind economically we must have combustion and to have combustion we must have draft and more so if we have to use soft bituminous coal for drying or water smoking or if the brick are only partly dry. The setting is an important step toward failure or success in the burning.

The uniform spacing and setting of the brick makes a uniform draft all over the kiln and saves many tons of coal or cords of wood, barrels of oil or feet of gas. Millions of dollars are wasted annually in fuel by setting the brick too close, trying to get too many brick in kiln. The foremen want to make a record-breaker by putting so many brick in a kiln, but they never tell the boss how many they get out. Is not what you put in a kiln, but what you get out and can sell. Brick are generally set too close in the benches and arches preventing the heat from passing up in the body of the kiln through the benches, confining most of the heat to the arches, over-burning the ends of the arch-brick and leaving the other ends two-thirds in length like raw clay, a total loss.

The overhangers are twisted, melted and two-thirds of the kiln salmon or soft brick. The burners make all kinds of excuses and the boss repeats the words so often spoken: "I wish I never had started a brick-yard. There is no money in brick."

In order to make what's in it you must go for it, you must not give up, go and do things the right way. You must set the benches and overhangers open, except the closing course

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over the overhangers. This must be set close except for about six feet through the center to make draft to that part of the kiln. The closing or tight course prevents the heat from going straight up, but instead spreads out into the benches, burning good hard brick there and hard brick to the top of the kiln.

In order not to waste fuel we must arrange the top of plating of the kiln so that we have plenty of openings for the rapid escape of moisture, water, smoke or steam, you may call it as you please. Its part of the water added to the clay in tempering in the soft and stiff mud process or the moisture in the clay, put there by nature, in dry-press-process.

No matter how dry a brick in appearance, there is always some water left, which must be slowly evaporated before the brick will stand rapid heating up to expell or rather burn the carbon in the clay and if you don't arrange your plating for sufficient draft you waste time and fuel and burst the top courses of the brick. There are three stages in the burning of brick, viz: (1) Watersmoking. (2) Raising heat and (3) The actual burning of the brick. During any of these stages you are wasting a lot of costly fuel, if you don't regulate the draft on top of the kiln. Time will not permit me to go into explicit details on this important matter and for the benefits of those who seek information and want to make more money I will send sketches showing how to arrange the plating during the different stages of th burning process and also sketch of how to set the brick in the benches. I will also send blue prints for down-draft kilns for brick and tile.

Mr. Wheat: I would like to ask if anybody can tell whether brick can be burned more cheaply by the updraft or the down-draft kiln?

President Pratt: Is there anyone here using the up-draft kiln who can answer Mr. Wheat's question? Are you an up-draft man, Mr. Haeger?

Mr. Haeger: I am, but I haven't got the figures handy. I think it figures out about fifty cents a thousand difference on our brick; that is, the labor and everything per thousand of brick. In the up-draft we have ten men; five during the day and five at night; and on the down-draft we have the day men only. There is a saving of labor. On the down draft we burn 105,000 brick. On the up-draft about 300,000. On the down-draft we use about 38 to 40 tons of coal to burn 100,000 brick. And about 50 tons on the up-draft. On the actual figures there is a saving of about fifty cents a thousand on the up-draft.

President Pratt: In regard to the marketing. How much difference do you find after they are burned?

Mr. Haeger: The burns in the down-draft run about 95% hard. The burns in the up-draft about 65% to 70% hard. I think it is more economical to burn them on the down-draft. When the market is near, like Chicago, you can sell the select hard brick at an added cost—get the added cost back two or three times over. I am in favor of the down-draft kiln.

President Pratt: In this connection I would like to ask Mr. Purington if he can give us any conservative estimate of the difference in the cost between the round and the rectangular draft?

Mr. Purington: We haven't found very much difference. There can be a large number of brick in the square kiln. I do not think there is: very much difference. There are very few round kilns. But for the benefit of those who use waste heat, there is economy in having kilns of even size. If they have large ones and small ones they will lose heat.

President Pratt: Would there be any particular difference in the yard room in the round or the rectangular?

Mr. Purington: It takes much more space for the large kilns than it does for the round ones. The cost of repairs

is more on the square kilns than it is on the round kilns. The cost is three or four times as much.

Mr. Wheat: What about continuous kilns?

Mr. Barr: Our concern put up a continuous kiln about fourteen years ago to burn paving brick, and about ten years ago they tore it down.

Mr. Purington: I think if any one wants to see a continuous kiln they should go to Bessemer, Penn., where they have a kiln about 500 ft. long; that means a thousand feet around.

Mr. Arbuckle: Over in Brooklyn, Ind., they are burning tiles and building blocks very successfully in a continuous kiln and they claim that they are doing it better than any where in Indiana.

President Pratt: What sizes are they capable of burning?

Mr. Arbuckle: The kiln is composed of 12 sections, six on each side. You may say 12 separate kilns. Each section hold about three car loads of drain tile. The sizes run from 3 1/2 to 30 inches and they are burning them successfully.

Mr. Solsburg: Mr. Millar, of the Don Valley Brick Co., Toronto, told me that in their burning they found small stones that burned black instead of into lime. I told him that we have some trouble about the lime, and the brick went to pieces; but he said where they used the continuous kiln they had not had that trouble. He said that he could not account for that. In Horseheads, New York they had the same trouble, but when they used the continuous kiln it disappeared. They had not used it with the pressed brick but with the common brick.

President Pratt: Are there any particular points that the members want brought out further in regard to that matter?

Mr. Wheat: I would like to ask of Mr. Arbuckle if he can tell what kind of continuous kiln is used at Brooklyn. I am interested in that because coal costs money and if there is a saving in the matter of coal as is claimed in the continuous kiln, I would like to know it. In some places it is hard to get a good circulation through the drain tile. I want to know whether it is of the ordinary type or just horizontal draft kiln?

Mr. Arbuckle: I don't know very much about it. I happened to be over there and have seen it a number of times. It was constructed by Mr. Youngren. The air comes in and goes to the crown of the kiln and down to the bottom and then is taken out by a system of tunnels from there. And in burning these tiles, he will heat one section red hot before he turns any gas in at all. That will be taken from the cooling kiln. On the one side he will be emptying and on the other filling. In one place his kiln is cooling and the other will become red hot before he will turn any gas in it. I am like other gentlemen here, I don't see why there are not more of them used. It seems to me very successful there.

Mr. Potts: In the Brooklyn plant I understand that they are also using the chambers for drying their ware, and the manager, Mr. Powell, told me that they were burning with one-third less fuel than they ordinarily used in the round kiln. The saving of fuel and labor is very much. It requires only one man during the day and one man at night to operate it.

Mr. Stoll: I am like the fellow who wanted to buy a saw mill, and when he was told that it would cost about \$400 he wrote back and said, what in God's name would I want the saw mill for if I had the \$400? The continuous kiln costs about \$30,000. That, I think, is why most of us don't use them.

Mr. Barr: Why not incorporate? (Laughter and applause.)

Mr. H. de Joannis: In Germany and France they are using them, right along. If the manufacturer uses a continuous kiln, he will save money in labor operations, he will save

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in fuel cost, he will save in cost of maintenance. It is well known that in the continuous kiln, if it is properly constructed, the cost of repairs is considerably lower than in the kiln of the ordinary type. I believe that the kiln at Mommence cost \$18,000. It offers a saving in the output. You can get bigger percentage of brick in the kiln of the rectangular type than you can in the round draft kiln. In the rectangular kiln the firing is continued without great loss of heat, such as would be occasioned by the emptying of one kiln and the firing of another. The continuous kiln has that advantage.

Mr. Purington: As to the firing. Fire should be started at one end so that the fire holes built in the setting of the brick will be directly over the fire holes in the kiln. In the continuous kiln at our plant these holes instead of being directly under the holes in the crown were off three or four feet after the setting of the brick and it was impossible to strike the hole that was directly under it when the fire started.

This kiln was on the plant when we bought it but was never operated by the Purington Company. I don't think they ever got any brick out of the kiln that was merchantable, and they spent about \$80,000 in the construction of it. It has all been removed, and the stack, that was something like 135 ft. high, has been torn down. It was in good shape but we didn't need it. Mr. Rogers, of Alton, says that he has spent a great many years in investigating. One of the troubles that he had was getting the proper draft. He took down the high stack that he had on this kiln and put in a fan to make the draft instead of the stack. I was down there about a year ago and he thought then that he had it pretty nearly perfected. I think any one interested in continuous kilns can get a good many pointers from Mr. Rogers, of Alton. He is using producer gas in that kiln.

President Pratt: Then it would appear to us that the trouble is, first finding the kiln, and then incorporate and get the money. It would seem in a large majority of cases, unless it is Mr. Rogers and Mr. Purington and Mr. Barr, that for most of the drain tile men, the men of smaller capacity, it would cost too much. It is like buying a high priced engine for a thirty-day job.

Mr. Purington: The Purington Company is not guilty of building this kiln, it was on the property when we bought it.

Mr. Tiernan: I would like to know how many kilns a person can attach to a stack, and the size of the stack to provide sufficient draft to carry off smoke successfully.

Mr. Search: I don't know that I can answer that question, but I do know, though, in my experience, that the more heat a kiln has on the stack, the greater number you can attach. We have seven kilns. The stack is 130 ft. high. We have sufficient draft. We have them all attached to this one stack and I think that the stack is sufficient to take care of four kilns, at a time, but after we get a hot kiln, probably we could put on more. The diameter of the kilns are 26 ft. and the stack is 130 ft.

Mr. Tiernan: Doesn't one hot kiln interfere with another?

Mr. Search: No, sir; we have no trouble.

Mr. Barr: The National Drain Tile Co. has just put in a new plant at Streator. They have one stack to each four kilns. It is a large stack and they put in two cross section walls, which really makes four stacks in one; they say that it works very nicely, and it seems to me that it would. We have four round kilns on each stack at our works without any division walls. We find that a hot kiln will sometimes interfere with another kiln that is not so far advanced, while with their arrangement they have no interference whatever.

Mr. Search: I had at one time those section walls in our stack, but I took them out.

Mr. Barr: The National run their section walls all the way to the top, making really four stacks in one.

Mr. Walter: I have four kilns and have two stacks. I have one stack that takes in the boiler and two kilns, but the boiler is separated from the other kilns by a partition of its own, and each kiln has a partition of its own that goes clear to the top of the stack. The other stack has two kilns with a partition in the middle, so each has its own flue, and we find that we have the best results that way.

President Pratt: I wish there was some one here who would tell us in regard to the exact equipment of the Mason City Sewer Pipe Co.'s plant at Mason City, Iowa. As I remember, each flue runs from the kiln separate to the stack. It is not joined. In regard to the dimensions and height of the stack, I could not say, but I think it is 10 ft. square, and something like 125 ft. high. In regard to whether they were a success or not, I really do not know. They were just building the plant at the time I was there, and it was very interesting indeed. But as to the partition on the inside, I think there were none. The stack was supposed to have sufficient draft to overcome the difference between the cold and the hot draft. Whether I am right in that regard, I couldn't say. One stack was working at that time with satisfaction. The flues were put in, I think, on a level with the ground.

Mr. Wheat: In our own experience we have only four kilns to one stack. We have never had one kiln cold and one hot.

Mr. Wheat: Which kiln would affect the other, the hot one or the cold one?

Mr. Barr: The hot kiln generally would affect the cold one. It wasn't very serious, however.

President Pratt: There being no further discussion of this topic, we will hear the paper "How to Create an Increased Use of Drain Tile," by Mr. James M. Mamer, of Campus. (Applause.)

### HOW TO CREATE AN INCREASED USE OF DRAIN TILE

The question, how to create an increased use of any manufactured article is of vital importance and interest to the producer of that article, and it is the purpose of this paper to outline a plan by which the drain tile manufacturers will be able to create an increased use of drain tile in the so-called tiled portions of Illinois and neighboring states and at the same time increase the wealth of the community and the comfort of his soil tilling brother.

To simply urge and advise the farmer to put in more tile, so as to have two, three or four strings where he now has one, will be looked upon by him as being coaxed to buy our goods, without getting full value in return. Hence the only way to overcome this erroneous idea is by a practical, and at the same time a striking object lesson.

I believe the best way to give this object lesson, is for every drain tile manufacturer to secure a small piece of land, if no more than five or ten acres, and drain it by putting in a string of four inch tile every sixteen or twenty feet. Then with the proper kind of treatment and farming make this land produce a corn crop of one hundred or one hundred and twenty bushels per acre. Let the farmers know what you have done and invite them to come and see for themselves; show them the results that can be obtained by the right kind of tile drainage and the results you will obtain from an advertising campaign of this kind, will keep you running your plant over time to fill orders.

Of course to tile a piece of land in this way will cost from \$50 to \$60 per acre. But when land is worth (in the corn belt of Illinois) on an average of \$150 per acre, and you can demonstrate to the farmer and land owner that by expending \$50 or \$60 per acre he can make each acre be worth two or three times the present value, he is pretty apt to take advantage of it as fast as his finances will permit. You will thus not only benefit yourself, but, to a greater and permanent degree, benefit the farmers and thus build up the wealth in

the community in which you live, and in reality be a public benefactor.

I am informed that the winner of the first prize at the national Corn Exposition, last October, had spent \$1,300 in tiling twenty acres of land: that he put in a string of tile every rod and that on this twenty acres he raised nearly 2,500 bushels of corn. With corn worth 50 cents per bushel, this yield would mean \$60 per acre, or in other words, his expense for tiling was nearly paid for from the first crop.

To maintain a production like this, the fertility of the soil must be kept in a permanent condition by adding the proper amount of plant food each year, and by the rotation of crops, etc. But when crops can be raised that will pay a dividend of from 10 to 20 per cent on the money expended for tiling and an equal amount on the money spent for fertilizer to keep the soil in the present state of fertility, it is certainly a better investment than any I know of anywhere at the present time.

According to circular No. 108 from the agricultural experiment station at the University of Illinois, it is high time for the farmer and business man of the Mississippi valley, to become aware of the fact that our soil is everlasting and that unusual steps must be taken if we do not want to leave to our grandchildren a country that has become as barren and unproductive as a desert, and I know of no one who ought to be in a better position to help in this educational work than we tile workers.

The writer intends to adopt a plan, such as is outlined in this paper, the coming summer and hopes inside of two years to make an interesting report and I trust that by that time there will be others to bring in an equally good report.

Mr. Haeger: It is a very good paper, but it seems to me that it is simply a matter of missionary work in getting the farmers to use drain tile. I have had an experience of only seven or eight years, but up to the last two years a person has been able to sit in the office and take the orders, fill them and get the money, but it is getting so now that with the competition not only of our own clay products but also in the cement line that it behooves every one to get out and talk to the farmers. I think the majority of us miss these Farmers' Institutes. You will find at least two of them in each county at the present time. I think that we should go to those institutes and see that there is some paper given on tiling drain and mix with the farmers and do some missionary work. I think our sales will increase very much if we do so.

Mr. Walter: I have been in the tile business since 1883 and that is my main-hold, but I must say that I have sold six more kilns this last year than I ever did in my life. I got out 119 kilns. I don't need to go out and talk tiles because I could have sold 50 car loads more if I had them. I know that our farmers believe in tile and buy them as fast as they can.

Mr. Mamer. The trouble with us last year was that the wet season was so unusually heavy and late that it was practically impossible to put in any large tiling anywhere in our section, I think Mr. Walter got some of that. I know on one occasion we had a rain fall of about eight inches of water. That was something unusual in our section of the State. We had high water, and higher than we hope we will have it for a good many years to come. The result was that the soil was so wet that the tile trade was very much short of what it was the year before. But at the same time at the rate that people are tiling in the average part of the State, why, it is simply the idea of getting rid of the water. We have got to demonstrate in some way to a farmer that he could get better results by going a little farther. I think a demonstration of that kind, if it is done on a small scale, can be done in a way that is interesting to farmers and at the same time be money in your own pocket. I would like to hear from any tile maker here.

Mr. Martin: I think that the paper has been discussed pretty well. I would like to ask the gentleman at what depth you lay your tile? In our country we think that we should get them three to four feet deep to get the best results. I have talked to some gentlemen here who say that they drain from 18 to 26 inches deep.

Mr. Mamer: I can only say that that subject was discussed pretty thoroughly here a year ago. It was practically decided that it was a question of soil. If you have a hard soil and want immediate results, you have got to tile shallow. If you have a soil where water percolates freely, you have got to tile deeper. It is a question of soil and a question of outlay. I think that the President has had a good deal of experience in tiling. I would like to hear from him.

President Pratt: I am afraid that you are mistaken or misinformed in that regard. As for the question of tiling, I can't say that I have had a great deal of experience, only as a manufacturer. I have had a few years of that. But I think that the underlying principle of the drain tiling is the fact, as you stated, that it is dependent more particularly on the condition of the soil, the physical condition of the soil, whether it is close or whether it is loose-grained and whether it is a good way to a tile and how deep your outlay can be. And another thing, how often your tile is flooded to an extent that it will back into the field or through your tile and in such a way as that block your tile and maybe flood your land. That seems unreasonable, but I think we have had a case in our vicinity this summer where we have had some property that should have been all right but for the water backing up and filling to a certain extent that was unnatural and in that respect it was a detriment. But otherwise I think that the main thing in laying drains to put them in as deep as you can, if you are not dealing with hard pan or quick sand; that if you can maintain an average depth of four feet, it is really better. You have a greater storing capacity above your tile for water in dry times. Another point is that if there is an excessive amount of rain, it goes down to the tile and the tile kind of holds it, instead of flooding the land. It will take a long time and stand a heavier rain before it gets to the point of getting down to the time or backing up and making it to the point of saturation. That means damage to the property if it stands long. Another thing, it doesn't flood the tile and the outlets and will give the same drain a larger degree and capacity by not putting it on to the drain at once. In regard to the quality of the tile, I think we have exploded the idea that the tile has got to take water through the side in order to have its capacity extended to the fullest amount. That is absurd, and in ordinary conditions is a detriment. We want tiles that can stand frost and at the same time we don't want them too porous.

An adjournment was then taken to Wednesday morning, January 15th at 9:30 A. M.

Next session will appear in next issue.

### GOLD WATCH FOR A RETIRING SUPERINTENDENT

J. F. Gessang, for several years superintendent of the Diamond Stone Brick Company, Wilmington, Del., who is to go to Mexico to take charge of a large brick plant, was shown the appreciation of the Diamond Company's employees when he was given a handsome gold watch.

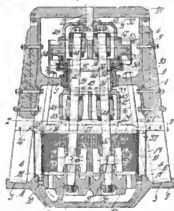
H. O. Duerr, general manager of the plant made a speech and the presentation was made by Charles Smith. At the close of the speechmaking a photograph was taken of the entire group. Mr. Gessang leaves for New York, where he will board a ship for Tampico, Tuxtepec, from which place he will go by rail to Gomez Palacio, Coahuila, where he is to be employed.

# NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

872,201. Pulverizing-Mill. George F. Rudnick, Iola, Kan., Filed May 16, 1907. Serial No. 373,890.

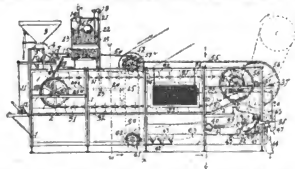
In a pulverizing mill the combination with a base constituting a basin, a die ring within the basin, and a cylindrical screen surrounding and upstanding from the ring; of a revolvable bearing sleeve, means for supporting the same above the basin, a driving element connected thereto, a



skirt depending from the sleeve, boxes mounted to oscillate within and rotate with the driving element, shafts journaled within and depending from said boxes, said shafts being free to oscillate within the sleeve and skirt, boxes surrounding the shafts and bearing within the skirt, grinding rollers carried by the shafts and disposed to co-operate with the die ring.

872,390. Lime-Hydrating Machine. John H. Van Gahm, Toledo, Ohio. Filed March 4, 1907. Serial No. 360,354.

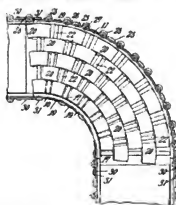
In a lime hydrating machine, a hopper, a spout for the hopper pivoted at its upper end, a knocker for the lower end of the spout, means for adjusting the force of the knock, a tank having two compartments one above the other, a float valve in the upper tank, a valve between the



two tanks, a driving gear for the machine, connections between the driving gear and said knocker and between the driving gear and said last mentioned valve, means for the adjustment of said connections, whereby the intervals between the movements of said last mentioned valve may be varied, an elongated chamber into one end of which lead said hopper and said tank and having a trough-like floor, an endless series of scrapers arranged to agitate and to carry the lime through said chamber, screens for separating the coarse from the fine lime, and means connected with said driving gear for actuating said screens.

872,856. Gravity-Conveyer. Charles H. Spence, St. Paul, Minn. Filed July 31, 1907. Serial No. 386,392.

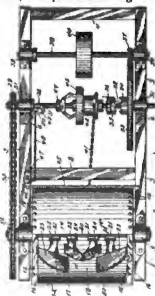
In a curved gravity conveyer, a plurality of radially arranged shafts, a plurality of frusto-conical rollers arranged on each shaft, and spacing means on the shafts for holding each roller from contact with the others.



In curved gravity conveyers, a plurality of radially arranged shafts, frusto-conical rollers mounted on the shafts, the upper or load carrying surfaces of all of the rollers of each shaft being disposed in a common horizontal plane.

872,610. Mixing-Machine. Roy N. Cunningham and John W. McPherson, Columbus, Ohio, assignors to The American Concrete Machinery Company, Columbus, Ohio, a Corporation of Ohio. Filed March 31, 1906.

In a device of the character described, the combination with a supporting frame of a drum mounted to rock in said frame, a shaft which extends through said drum, means for rotating said shaft, a pair of oppositely inclined flat faced plows mounted upon said shaft and having bodily rotation therewith, said plows traveling over the inner face



of the drum and throwing the material toward the sides of the drum, flattened faced plows inclined at such an angle as to throw the material toward the center of the drum, said latter plows also being mounted upon said shaft and having bodily rotation therewith and said latter plows following the first named plows, means for rocking the drum in a direction opposite to the rotation of the shaft, and means for driving said latter means from the driving mechanism of said shaft.



## CLAY RECORD.

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GEORGE H. HARTWELL, EDITOR

## SUBSCRIPTIONS

Send One Dollar bill or stamps for United States, Canada or Mexico and one dollar fifty cents for all other foreign countries.

Papers are not stopped at the end of subscriptions unless the subscribers order them so and pay up the arrearages.

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Vol. XXXII. JANUARY 15, 1908. No. 1

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

## CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick and Tile Association will be held at Des Moines, Iowa, January 22 and 23, 1908.

The eighth annual convention of the Wisconsin Clay Workers' Association will be held at Milwaukee, February 12, 13 and 14th, 1908. Headquarters at the Hotel Blatz.

The tenth annual convention of the American Ceramic Society will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Southern Hotel.

The twenty-second annual convention of the National Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d to 8th 1908. Headquarters at the Southern Hotel.

The thirtieth annual convention of the Illinois Clay Workers' Association will be held at Peoria, Ill., Jan. 14-15 and 16th 1908. Headquarters at the National Hotel.

Laziness is a habit that grows fast and clings close.

It is never too late to be what you might have been.

Cling to success. The first step is an advertisement in the CLAY RECORD.

Here's to the prosperity of every man who puts on a little extra head of steam when necessary.

"Walking in the rut" is a poor mode of progress. Turn into the big highway of "Go" and go.

Good will is better than peepsin tablets to aid digestion.

When you can't have your own way, don't pose as a martyr at the stake earning a halo.

Be sure to live on the sunny side, but do not expect the world to look bright, if you habitually wear brown glasses.

Don't be selfish. Tell your friends about the CLAY RECORD. Many readers mail copies each issue to friends in other cities.

## BRICK RATE REVISION IS VERY EXTENSIVE

The recent revision of the rates on brick westbound in the territory of the Central Freight Association will affect many products other than the word brick indicates. These new rates will show an increase of about 10 cents on long-haul and 5 cents on short-haul shipments per ton and will become effective March 16. All the roads in this territory, which extends from Pittsburg, Erie, Buffalo and Wheeling west to the Mississippi and south to the Ohio river, will use these rates.

Under the heading of brick rates many were led to believe that this increase would only pertain to the different kinds of brick, but the true meaning of this heading includes the following products: Asphalt, bituminous blocks and paving blocks, brick conduits, building brick, clay, cattle guards, common brick, common or crude clay or shale (shipped in bulk, not ground or prepared), common mud brick clay sleeves, clay stopper heads, clay tuyeres, face building block, face building brick, firebrick or fire blocks, fireclay, fire proofing, flue lining, furnace or tank blocks or brick, ground fireclay, hollow brick, hollow tile, paving brick, pressed brick, enameled brick, salt glazed brick when shipped the same as pressed brick and brick not being packed, sand lime brick, stone conduits, tile slabs, vitrified curbing.

Manufacturers and consumers of these different products were not aware that this revision would have any bearing on other than building, paving and fire brick. A new schedule of prices on these articles will no doubt follow this increase in rates, and consumers of these various products will be obliged to make new estimates on contracts. The thousands of tons handled by the railroads will no doubt show a material increase in their revenues.

## OBITUARY

William M. Marshall, a retired pottery manufacturer, died at his home in Trenton, N. J. He was 72 years old.

Charles M. Kichline, son of the owner of the Kichline Brick Company, Allentown, Pa., died of tuberculosis at his home, 445 Lehigh street.

Isaac Reese, a pioneer of the fire brick industry and inventor of the Reese Silica brick for open health furnace building, died at his home in Pittsburg, Pa. He was born in 1821 in Wales.

George W. White, aged 81 years, and for years the leading brick maker at Lexington, Tenn., died of a stroke of paralysis with which he was smitten two months ago. He leaves a widow and three children.

Oliver Trunk, died at his home, 329 North Galena avenue, Freeport, Ill., of heart trouble, caused by stepping on a nail and blood poison setting in. He was born in 1846. He was formerly a manufacturer of brick.

John Felter, the eldest of the Felter Bros., brick manufacturers and lumber dealers at Little Ferry, N. J., died of dropsy in the Hackensack hospital, where he had been taken for treatment. He was 65 years old.

William H. Barnes, of Caskill, N. Y., a large Hudson river brick manufacturer, died from a stroke of apoplexy in a trolley car in New York city. The New York office was 680 Twelfth avenue. He was 62 years old.

Calvin M. Christy, chairman of the board of directors of the La Clede-Christy Clay Products Company, St. Louis, Mo., died at his winter home in Datonia, Fla., of apoplexy. He was 72 years of age. He is survived by a widow and six children.

Peter G. Van Zandt, a wealthy brick manufacturer at Trenton, N. J., died at his home after being unconscious for six weeks, as a result of a fall he sustained while in New York. He never rallied so as to tell how it was caused. He was 71 years of age.

## FIRE! FIRE! FIRE!

Fire destroyed a portion of the John E. Schroepel brick works at Collinsville, Ill. Mr. Schroepel in driving to the works was thrown from his buggy and injured.

The drying sheds of the Norristown (Pa.) Brick Company were destroyed by fire. Firemen did effective work which saved the plant from burning completely. Loss \$3,000.

Fire totally destroyed the brick plant of James Berry at Woodbridge, N. J., causing a loss of \$18,000, which is fully covered by insurance. The factory will be rebuilt at once.

The plant of the United States Tale Corporation between Bethel and Rochester, Vt., has been destroyed by fire causing a loss of \$5,000. E. P. Jose, of Boston, is the general manager of the company.

An incendiary fire destroyed the Simons Brick Company's plant at 855 S. Boyle avenue, Los Angeles, Cal., to the extent of several hundred dollars. In July and again in November attempts were made to destroy the plant.

Fire destroyed the plant of the Wausau (Wis.) Brick and Tile Company, causing a loss of \$14,000 with only \$2,000 insurance. Herman Gerbsch, the well-known brick maker, is the manager and largest stockholder of the company.

## ACCIDENTS, DAMAGES AND LOSSES

Lewis Bales wants the Iowa Brick and Tile Company, Des Moines, Ia., to pay \$5,050 for injury to his leg, received while operating a steam shovel for the company.

A receiver has been asked for the Crescent Brick Company at Towson, whose plant is at Lansdown, Md., asking that the business be closed up and debts paid.

A strong wind blew the new buildings and sheds of the Ingram Brick Works at Carrollton, Texas, to the ground and damaged the property to the extent of several thousand dollars.

In an argument at the plant of the Logan (O.) Brick Company, Secero, an Italian foreman, shot and dangerously wounded George Hale, an employee. His chances of recovery are slight.

Louis Lager, Aberdeen, S. D., has filed a petition in bankruptcy and places his liabilities at 21,443, and assets at \$9,334. He is the manager and part owner of the Aberdeen Brick Company.

Theodore Helting, a well known brick maker at Matoon, Ill., filed a voluntary petition in bankruptcy. Liabilities \$13,308. His brick plant was taken a short time before on a mortgage.

Miss Bertha Weber, daughter of Richard Weber, foreman of the Glen View (Ill.) Brick Company, was instantly killed by being run over by a freight train while crossing the tracks near the station.

Ernest G. Stedman, treasurer and director of the Raritan River Clay Company, committed suicide by jumping in front of an express train in the subway at Fourteenth street, New York. The body was cut to pieces, six cars passing over it.

Jesse D. Hand, of Ann Arbor, Mich., one of the promoters of the Britton (Mich.) Pressed Brick Company, was caught in the flywheel at the works and whirled four times around the pulley, and finally thrown into a clay pit. It is thought he will recover.

Isaiah Frank, 407 East Fifth street, New York, has filed petition in bankruptcy with liabilities of \$13,197 and assets consisting of a mechanical equipment of a brick making plant at Huntington, L. I., N. Y., and shares of stock in a sand lime brick works in Philadelphia.

## CONRAD CARRIES SUIT TO SUPREME COURT

The suit of Harvey Conrad against the Keller Brick Company, Akron, was filed in the supreme court at Columbus, O. Conrad lost his leg in a pug mill operated and owned by the defendant company. He brought suit to recover damages and in the common pleas court of the January term of court was allowed \$1,500.

The court granted the company a new trial of the case, holding that if the company was not liable it should not be taxed any sum whatever and that if the company was liable, then Conrad should recover more than \$1,500.

Upon the second trial of the case, the common pleas court dismissed the petition and directed the jury to return a verdict for the defendant company. Conrad then took the case to the Circuit court, but that court affirmed the decision of the lower court. Conrad has now taken the case to the supreme court.

# ALBERT A. GERY PURCHASES SCHUYLKILL VALLEY CLAY MANUFACTURING COMPANY'S PLANT AT SHOEMAKERSVILLE

Albert A. Gery has made announcement that he has purchased the plant of the Schuylkill Valley Clay Manufacturing Company, located at Shoemakersville, Pa. The plant manufactures sewer pipe, conduits, fireproofing, etc., and represents an investment of \$250,000. It was owned by Philadelphia capitalists.

Mr. Gery intends making it a family enterprise exclusively, his brothers, F. S. Gery and W. A. Gery, with himself comprising the company. A charter will be at once applied for under the laws of Pennsylvania.

The new company will be known as the Glengery Brick and Clay Company and will be capitalized at half a million. It is named after A. A. Gery's country home, located along the Maiden Creek, about five miles from Shoemakersville.

The plant has been idle for about a year. The new company will immediately get it in readiness for operation. Mr. Gery intends making the manufacture of brick an important feature without interfering with the present equipment for making sewer pipe, etc. He will install machinery giving it a capacity for 50,000 a day. These will be face and sewer brick and street pavers.

The Shoemakersville plant is located on the Pennsylvania railroad, and the Schuylkill canal passes through the premises, affording good facilities for shipping.

The property covers 60 acres and the plant is equipped with 500 horse-power machinery, including the latest boilers, Corliss engine and 12 down-draft kilns, each with a capacity of 150,000 bricks.

The main plant occupies a building four stories high and 60x200 feet in dimensions with wings half the size of the main plant and also four stories high. The plant is heated by steam and lighted by electricity.

"Does this mean that you will devote your entire time to your new enterprise?" was asked of Mr. Gery.

"No. I will look after my interests in the Montello group, giving special attention to the Oaks plant, which contains my patents.

"F. A. Gery will personally look after the Kaaterskill plant, in which I lately acquired a larger interest. W. A. Gery will pay special attention to the new Glengery plant at Shoemakersville. I do not consider this new plant as likely to interfere with any of the Montello group, since its output will be confined to face and sewer brick and street pavers.

"The Glengery plant will obtain its material on its own premises, where there is a large deposit of clay, and there is also a mountain of shale nearby.

"I intend holding the Glengery factory for myself so that in the future I will have a plant in which to experiment with my patents and demonstrate them."

## TARIFF TO LOW, CANNON TELLS POTTERS

Speaker Cannon addressed the members of the United States Manufacturing Potters' Association behind closed doors at the Raleigh Hotel, Washington, D. C., Dec. 4th, assuring them of a continuation of the high tariff. The Speaker said that in his opinion the present tariff was not high enough, and that it is very probable that no serious attempt at revision will be made.

Senator Foraker addressed the assembly also, and was given a warm reception.

# PIONEER CLAY PRODUCTS MANUFACTURER SUCCEUMBS TO APOPLEXY AT WINTER HOME

Calvin M. Christy, chairman of board of directors of the Laclede-Christy Clay Products Company, and a pioneer resident of St. Louis, Mo., died at his winter home, Daytona, Fla. Death was due to apoplexy. He was buried temporarily at the winter resort, but in the spring it is planned to bring the remains to St. Louis, where they will be interred in the family lot in Bellefontaine cemetery.

Mr. Christy, who was 72 years old, had been in business in St. Louis since the end of the Civil war. For many years he was associated in the dry goods business with J. C. Moore. Later he became interested in the manufacture of clay products, and eventually built up one of the largest concerns in the Mississippi valley. In this enterprise he was associated with W. C. Morris.

For the past five years he has spent the winter at Daytona, where he had purchased a handsome villa. His home in St. Louis was at No. 4373 Morganford road. He was in the best of health when he departed for the southeast the last time, and the news of his death was a shock to his friends.

Mr. Christy is survived by his widow and six children. They are: Mrs. Ellen C. Montells, of Greenwich, Conn.; William T., John L. Bau, Mary Belle, Virginia L. and Calvin M. Christy, Jr. A nephew, Charles T. Farrar, resides at No. 4523 West Pine boulevard.

## PORTSMOUTH A PAVING BRICK CENTER

Portsmouth, Ohio, was not always the paving brick center that it now is, nor did its manufacturers always produce the grade of material which they do now.

The business was started in this locality 20 years ago by Messrs. Turley and Beyerley, at the old Black Diamond Works, now known as the Portsmouth Paving Brick Co., and located near the junction of Chillicothe and Findlay streets. These gentlemen, by their energy, ability, care and sacrifices found the material and made the experiments which has developed into such a large proportion of our industries. May it be said to the everlasting praise of the city councils, that there has never been a brick laid on one of the streets since the first plant started that has not been made by one of the home companies.

Shortly after the starting of the first paving brick yard, the Star Fire Brick Company commenced making paving brick and in a little while the Scioto Fire Brick Company commenced to manufacture their famous "Union Paver." The next to join the ranks of the Portsmouth paving brick manufacturers was the Kentucky Fire Brick Company. Then the mammoth plant of the Peebles Paving Brick Company, and later the plant owned by the Carlyle Paving Brick Company, and then the second plant of the Peebles Company, and at this writing, the Carlyle Company has purchased the land for another plant near the one they already have.

There is employed in the manufacture of paving brick in the Portsmouth district, 1,000 men, with a daily payroll of \$2,500, and the brick are used in the states of West Virginia, Ohio, Indiana, Illinois, Kentucky, Michigan, Wisconsin, and the money brought into this community from this source runs into the hundreds of thousands annually.

**HOME OF THE MARTIN AT LANCASTER, PA.**

We present herewith a good illustration of the new addition to the home of the famous "Martin" Clay Working Machinery, and we take great pride in inserting in our columns such a building that is worthy of note to our readers. The complete front of this building is devoted to offices and rooms for a complete study of the clay industry and the Henry Martin Brick Machine Mfg. Co. of Lancaster, Pa., has achieved an enviable reputation among the clay workers through its fine clay-working machinery and straight business dealings. An enterprise founded on honest commercialism is bound to advance and the "Martins" are no exception to this law. Their business has extended greatly during the past few years, and many improvements have been made to their factory, which is thoroughly up to date in its equipment.

The main offices in the foreground and in the rear of the offices, same building, is where the "Martin" machinery is erected and tested. They employ the best talent obtainable and systematize their lines and employ the latest and

**POTTERY INDUSTRY STARTS OUT WELL**

The year 1908 is starting out under favorable circumstances for the manufacturing potters of the western territory. Buyers have been coming in and report various conditions in their trade. Some predict a good year, others believe that business will be a little off until after the Republican national convention.

Not all of the potteries have resumed operations yet, although the bulk of them are giving employment to thousands. The main cause of some others not starting is the gas concerns, who have thrust a most unreasonable contract upon the manufacturers, and who in turn do not guarantee anything. It is upon this feature of the contract the manufacturers are kicking. It has cost manufacturers from \$28.87 to \$33.55 to fire kilns with gas under the flat rate which has prevailed for years. Meters have been put on kilns for test purposes, and if they prove satisfactory they may be allowed to remain. The chances, however, are against the meter and in favor of coal.



**PLANT OF THE HENRY MARTIN BRICK MACHINE MFG. CO.,  
LANCASTER, PA.**

most modern shop facilities and all their machinery is set up and thoroughly tested before loaded on cars for transportation, the machinery being loaded on the cars inside of this large building and handled only by experts in this line, so as to make sure that everything shipped from their factory is in a No. 1 condition.

The plant covers several acres and its equipment includes the most advanced machinery procurable for the manufacture of clay appliances in all branches. The company equips brick and tile making plants complete, including moulding machinery, artificial dryers, engines, boilers, etc. Clay workers going east should not fail to visit this plant and have a social chat with the "Martins."

**MANY TONS OF CLAY OUTPUT DAILY**

The average daily output of the clay plants of Clay county, Indiana, is computed at 55 carloads of products, averaging 25 tons to the load. As these plants are operated practically every day the year round, the annual production is not less than 400,000 tons, the market value of which, at \$6 a ton, is nearly \$2,500,000; as much as two-thirds of the valuation of the city of Brazil, or one-sixth the total appraised value of the country, personal and real.

Salesmen who have been at the home office for the past three weeks have started to leave the potteries for their first spring trips. The eastern representatives are the first to get out, while the western men will not start for several days. The crockery and glass exhibit at Pittsburg, has caused much favorable comment.

At the annual meeting of the Knowles, Taylor & Knowles Pottery Company, held this week, Col. John N. Taylor was again elected president of the corporation. Other officers are: Vice president and general manager, Joseph G. Lee; secretary, Harold H. Knowles; assistant secretary, Elder D. Moore; assistant general manager, Will L. Taylor. Business of the concern was found to be in a good condition, and that the year of 1907 was a profitable one.

From indications pottery manufacturers throughout the United States are sticking closely to the lists adopted at the Pittsburg meeting in December. Buyers, while they are seeking the best prices, assert that they have been unable to "drive any bargains" and this, of course, means that the selling lists are being maintained in a strenuous manner. As a result, manufacturers will, at the end of the year, be able to show a greater per cent of profit than for several years past.

## CLAY RECORD.

**IOLA, PITTSBURG AND CHANUTE BRICK MEN WOULD HAVE ADVANTAGE**

The brick manufacturers at Coffeyville, Cherryvale and Caney, Kan., have filed a plea in intervention with the state board in the freight case which was brought for the purpose of establishing the new district tariff freight schedule prepared by the board.

The interviewers do not want brick rates as at present in force disturbed. Under present rates, Iola, Pittsburg, Coffeyville and the other brick towns enjoy terminal tariffs, put in voluntarily by the railroads, which enable them to compete in all territory on a freight rate parity. This rate is a sort of blanket rate.

The rate proposed by the board is built on a distance basis, and reduces the rate from all brick making points. The brick makers at the towns intervening are further removed from most of the trade territory in Kansas than are Iola, Pittsburg and Chanute, and under the proposed rates the last named towns will have some advantage in rates over Coffeyville, Caney and Cherryvale.

However, the brick rates will be reduced from all points from this reduction the board expects the consumers of brick to get a benefit. The board will take no action regarding the plea in intervention until the freight rate hearing, which is set for January 14.

**BRICK MEN ARE NOT PESSIMISTS**

Brick manufacturers in Bessemer, Ala., do not take a pessimistic view of conditions for the year 1908, on the other hand they are of the opinion that in their lines of business there will be as great a demand for brick as there was in 1907. One brick man in speaking of the outlook, said: "We are selling brick in the agricultural districts, the demand being steady, and I believe that this demand will grow." The same dealer has booked some handsome orders since the first of the year, and he is confident this will continue.

Bessemer has three large brick manufactories and all did a splendid business in 1907, with shipments to many parts of the south, and it is encouraging to note that in this line the year promises well.

**EASTERN MANUFACTURERS MAKE AN APPEAL TO TRANSCONTINENTAL LINES**

Application has been made by eastern manufacturers of architectural terra cotta to transcontinental lines for a reduction of the present rates, which are 80 cents a 100 pounds from territories east of Chicago and 75 cents from territory west of it.

It is stated that since the fire there has been contracted for and partly used in the rebuilding of San Francisco some 18,000 to 20,000 tons. It is estimated that this is a small part of the supply that will be necessary in the next few years. Applications state that if the rates are reduced to a reasonable figure an enormous volume of this commodity will be moved from the east to San Francisco.

Transcontinental lines are understood to be disposed to grant applications for lower rates for building material needed for the rehabilitation of San Francisco.

**BIG ADDITION TO TOWNSEND BRICK PLANTS**

With firm confidence in the future of business, the T. B. Townsend Brick & Contracting Co., Zanesville, O., are making plans for the enlargement of their plant and the increase of the company's working force. Mr. Rufus C. Burton, of that company, declared that no reduction had been made this winter in either the number of men employed or the amount paid per day. He further said that just as soon as the enlargement shall have been made in the local plant an additional force of men will be put to work, and that the additions to the manufactory will be begun soon after January 1.

In order to ascertain from the highest sources what machinery and methods should be added to the big plant on Water Works hill in order to make it the best equipped brick producing concern in the country, the company has sent three of its trusted employees out on a tour of inspection. James McKinney, the general foreman; A. L. See, foreman of the mechanical department, and George Lawson, head burner, go out among brick-makers and brick-machine makers on a trip to last a week, and they will come back "loaded" with ideas enabling them to convert the Townsend brick yards into the most effective possible plant for the manufacture of brick.

**BRICK COMPANY CLAIMS RAILROADS DID NOT FURNISH CARS PROMPTLY**

Alleging that they had lost two valuable contracts for supplying large quantities of brick on account of the delay of the Southern railway in furnishing the necessary cars for the handling of same, the Morrison-Trammell Brick Company, Rome, Ga., brought suit against the railway company for the recovery of \$3,393.75.

The petition covers several typewritten pages, and sets out that there is no other line of railroad near the brick plant of the plaintiff, and that the Southern Railway Company was under contract with them to furnish cars whenever desired for the transportation of brick.

It is alleged that the plaintiff had a contract with Wiley Trammell for the purchase of 200,000 brick to be delivered at the plant of the Crucial Fire Brick Company in West Rome on which they would have made a profit of \$637.50. The other contract for the sale of brick was with the Rome Brick Company for brick to be delivered at Carrollton, Ga., on which they would have cleared \$2,666.25. They alleged that they were unable to deliver these brick within the time specified in their contracts on account of the failure of the railway company to furnish them with the necessary cars.

**TWO BIG CONTRACTS ARE AWARDED**

Contracts for the brick for the new Des Moines federal building have been awarded to the Granite Brick Company of Des Moines. The contract calls for one and one-half million of brick. These brick will be used only in the backing of the building. Vitrified hard burned, non-porous brick will be used.

Shackelford Brick Company was awarded the contract for the brick for the new Des Moines brewery. The contract calls for 600,000 brick. Black faced brick will be used for the facing of the building.

**SAND OR LIME BRICK OR BLOCK NEWS**

Papers have been filed to dissolve the Marcotte-Forbes Cement, Brick and Tile Company at Fort Huron, Mich.

J. D. Wilson, George Behrenfeld and William Talbott, Heron Lake, Minn., will start a cement tile factory at once.

The Kansas City (Mo.) Gray Brick Company was awarded contract to furnish 2,000,000 brick for a large building at Bonner Springs.

The Belt Line Brick Company, Minneapolis, Minn., are to establish a plant at Faribault for the purpose of burning lime to use to make sand lime brick.

Chester Spawn, Chester, S. Dak., a farmer, has as a side line a manufacturing plant to make cement brick, blocks, etc. He has interested other capital with him.

The Watertown (S. Dak.) Pressed Brick Company's plant is closed down for repairs so that when spring season opens it will not be necessary to make frequent stops.

Gen. John McDonald, of Chicago, proposes to purchase a tract of land in Portage township, Indiana, for the manufacture of sand lime brick. The sale is nearly completed.

The Wilson-Hoyt Company, Short Hill, N. J., has been incorporated with \$125,000 to make cement, brick and lime. Incorporators are Sarah Wilson, William T. Wood and others.

A \$50,000 sand lime brick plant is to be established at Ardmore, Okla., and work on the construction will be started at once. N. W. Dunham of Dallas, Texas, is at the head of the company.

The Aleco Stone Brick Company, Tampa, Fla., will be incorporated for the manufacture of composite stone brick by the Avram-Leet Engineering Company, 225 Fifth avenue, New York. Machinery has been ordered.

The Hollow Brick and Construction Company, New York, has been incorporated with \$25,000 capital stock by Frank Lyons and Robert Turrell of Plainfield, N. J., and Edwin R. Jarvis of 208 West Forty-third street, New York.

The Composite Brick and Tile Company, Oklahoma City, Okla., a \$200,000 concern, will put in machinery at once to make the "U-Knit" concrete brick and roofing tile for which it has the rights in five states. Charles W. Jones is the general manager.

A receivership has been asked for the Ft. Wayne (Ind.) Pressed Brick Company. About two years ago control was bought by the Butler's of Albion, Ind., who had exclusive management. Five months ago they abandoned the plant and left the city. The plant has been a paying one and can be continued in competent hands.

The annual meeting of the North Judson (Ind.) land lime Brick Company was recently held and A. L. Courtright was elected president and secretary; Jacob Keller, vice president, and Silas Myers, treasurer. It was decided to take the company off to Knox, and it is expected to operate the plant April 1, or sooner if the weather will permit. Repairs will be made before the plant is reopened.

Fred L. Luth, of St. Louis, has been appointed general manager of the Banner Clay Works Co., Edwardsville, Ill. They maintain an office in St. Louis, Mo.

**DRAIN AND SEWER PIPE NEEDED**

Writing from Vancouver, B. C., December 20, 1907, Consul Dudley reports:

There appears to be a most inviting opportunity for the establishment of a manufacturing plant of drain and sewer pipe and similar products at or near this city. It is said that the plant on Vancouver Island, from which the supply for the city is procured, is the only one on the coast. The authorities of Vancouver have been obliged to suspend work several times because of inability to secure sewer pipe. Just now the city has been notified that no more pipe can be furnished for at least two weeks. The demand is constantly increasing. I have been informed that there is an abundance of good clay in this vicinity adapted to the manufacture of drain and sewer pipe.

**THE RAYMOND COMPANY MAKE CHANGE IN DISTRICT OFFICE**

The C. W. Raymond Company have made a considerable change in their southern district office for this year.

Mr. C. H. Wilson, who was well known as their efficient representative, resigned to engage with the Cincinnati Sewer Pipe Company, in which he is heavily interested.

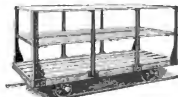
The Raymond Company moved their headquarters to Atlanta, Ga., 415-416 Peters building, and placed Mr. K. D. Smith in charge of the work.

Mr. Smith is a young man, energetic and capable and there is no question but that he will make good in his new position. He has been associated with the Raymonds for a number of years, first in their office and later as an assistant in the Kansas City district office, and in both positions met with enviable success, due to his perseverance.

The C. W. Raymond Company introduced Mr. Smith to their southern friends with the assurance that he will serve their wants in the most careful manner.

## **The Lightest Running Dryer Car Made**

**having a dust proof roller bearing  
box made of steel. No oil needed.  
Write for description and prices**



**Vulcan Iron Works** MASON CITY, IOWA

## MISCELLANEOUS ITEMS

The Eason Brick Co., Vermillion, Alta., have been organized.

Wm. Colby is promoting a brick and tile works at Rockford, Iowa.

There will be two brick manufacturing plants in Scranton, N. Dak., in the spring.

The old plant of the Peebles Brick Co., Portsmouth, O., is shut down for repairs. The new plant is running full time.

The Carlyle Paving Brick Co., Portsmouth, Ohio, has purchased land for another plant near the one they already have.

The Fertile (Ia.) Clay & Peat Co. have bought the 600 acres of land which they held options on which gives them a fine deposit of clay and peat.

At a meeting of the Latonia (Ky.) Brick Co., the capital stock was increased from \$20,000 to \$25,000. The additional money is to be used as operating capital.

Jacob Fastner, of Oshkosh, Wis., has interviewed the Business Mens' Club of San Antonio, Texas, with a view of starting a plant to make tile and polished brick.

The Hill & Karnes Brick Co., Paducah, Ky., has been incorporated with \$50,000 capital stock. Frank P. Hill is president; Neva Hill vice-president and Ernest Karnes secretary.

The Sioux City (Ia.) Brick & Tile Works have completed a continuous kiln that will burn 1,000,000 in 20 days. The company has made improvements this year to the extent of \$40,000.

Thing Bros. have made arrangements for the establishing of a brick plant at Calexico, Cal., on the border between California and Mexico.

The Mississippi Glass Company, St. Louis, Mo., has incorporated with \$100,000 capital stock to manufacture and deal in glass and clay products.

The Choctaw Brick & Gas Co., Mansfield, Ark., report that the past year has been the most satisfactory in the history of the company, which has been brought about by the installation of gas to burn their goods.

The Hanover (O.) Red Pressed Brick Company, a new \$130,000 stock company composed of Newark, O., capitalists, on January 2 took over the plant of the Hanover Pressed Brick Company, which was owned by Columbus men.

The Nova Scotia Cement & Plaster Co., Toronto, Ont., have been incorporated with a capital of \$100,000, to manufacture gypsum, cement, plaster, ores, etc. The provisional directors include J. S. Lovell, W. Bain and R. M. Coates, Toronto.

A. Bartz, one of the owners of the Centralia (Wash.) brick works, has returned to his home in Tacoma from his trip to Germany and Arthur Brooknell, the manager, has made arrangements with Mr. Bartz to develop the property and install modern machinery on up-to-date lines.

The Illinois Fire Proofing Company has been organized at Grafton with a capital stock of \$200,000. The officers are John A. Dailey, of Terra Haute, Ind., president; William H. Joumey, mayor of Grafton, vice president; W. O. Kirkpatrick, of St. Louis, secretary and treasurer.

## AN EXCELLENT OPPORTUNITY

As I am not a practical brickmaker and bought this plant to protect myself, I will offer same for sale to responsible parties.

### The Material

The material is a red plastic surface clay from 10 to 35 feet thick, free from stones and burns a cherry red in five days. Twenty acres or more goes with the plant, 250 acres more can be had if necessary.

### The Markets

The market is the cities lying adjacent to Hampton Roads, Va., the Natural Gateway to the markets of the world for the products of the middle west and south. These cities have made wonderful progress in the last ten years and with the completion of the Railway, nearly finished, will go forward by leaps and bounds. The completion of the canal from Norfolk through N. C., so that the coast way shipping can avoid the dangers of Cape Hatteras and which is now under way by the United States government, will be a great stimulus to the growth of these cities. The entire section of the country is rather sandy, for this reason brick clay will always be scarce and valuable. Brick has been ready sellers at seven dollars for some years and the outlook is for higher prices.

### The Equipment

The equipment consists of a 100 horse power Boiler, 50 horse power Engine, Disintegrator, Pug Mill, Brick Machine, a Martin patent rack and pipe steam dryer, tools of every description, brand new, not used 20 days, and on same yard, side by side is also

### Stiff Mud Outfit

A 40 horse power Boiler, 35 horse power Engine, a J. D. Fate Company combined "Hummer" Machine with a Binsing Automatic End Cutting Table, Scott's patent brick cars, with rack and pallets for open air drying in sheds. A complete stiff mud outfit in excellent condition.

### Houses for Help and Manager

There are new and commodious houses for the manager and different classes of laborers.

### Cost of Plant and Terms

There is not a more complete yard or one more up-to-date in the state for its size. The machinery has cost nearly \$10,000, but will sell very reasonable and on easy terms. The mildness of the climate enables one to run with the steam dryer the year around.

ADDRESS

W. T. JONES, Williamsburg, Va., LOCK BOX 3

J. H. Mellroy, Fayetteville, Ark., will develop fire clay deposits.

Prairie Grove, Ark., is contemplating the starting of a brick and tile works.

The Clay Center (Kan.) Brick Company has been granted a charter by the state.

The Lake City (Ia.) Clay Works Company, is now busy putting out clay for the season's run. Mr. Mitchell is in charge of the gang of men engaged in the work.

The Ashland (Ky.) Fire Brick Company furnishes employment to 430 men, making blast furnace brick and vitrified paving brick. H. D. Savage is the sales manager and treasurer.

The Scioto Fire Brick Company, Sciotoville, Ohio, have started their upper yard and the lower yard will be remodeled and turned into a paving brick plant which it was originally built for.

Vogelmeier Bros., brick manufacturers at Newark, Ohio, closed down their plant for repairs after the most successful run of business in the history of the company, which has been for 30 years.

The Rockwell City (Ia.) brick and tile works closed their works about the 25th, after the most successful year since the organization of the company. The capacity of the plant will be doubled this year.

The Douglas Clay Manufacturing Company, Los Angeles, Cal., has been incorporated with \$25,000 capital stock. Directors are Archibald Douglas, Benjamin Douglas, C. R. Manbert, Norman A. Baillie and Benjamin Kirby.

The F. H. Goss Company, Tacoma, Wash., is building a brick factory to have a daily capacity of 50,000 brick.

J. C. Stamm, of Nana, Ill., has bought the Tower Hill (Ill.) brick and tile works of J. W. Silby and will operate same.

The Lexington (Ky.) Brick Company increased its capital stock from \$40,000 to \$75,000 and will increase the capacity of the plant.

Ladysmith, Wis., is to have a brick and tile manufacturing plant this season. A fine deposit of clay has been found near the town.

The Muscatine (Ia.) Clay and Tile Company have secured a desirable site for their plant and will begin the building of the plant as soon as possible.

The business at the George T. Myers & Co., brick and tile factory at Memphis, Mo., has increased to such an extent that the Burlington railway will put in a switch for them.

The Abingdon (Ill.) Paving Brick and Tile Company, have just closed the best year in the history of the company. W. R. Guyer is the manager that has been able to make this showing.

A Pittsburg syndicate, represented by T. G. Stuart, of Winchester, Ky., has acquired 15,000 acres of coal and fire clay land in Carter, Lawrence and Elliott counties, Ky., and will mine coal and fire clay on royalties.

The Paterson Clay Products Company, Clearfield, Pa., has been organized to make brick, sewer pipe, and terra cotta. The incorporators are Alexander Paterson, Reuben H. Thompson, and Judge Allison O. Smith.

## For Sale: Engines and Boilers

### ENGINES:

**Corliss and Automatic:**—20 x 42 Atlas, 18 x 42 Hamilton, 18 x 36 Wright, 16 x 32 Buckeye, 14 x 24 Atlas, also 12 x 30, 10 x 30, 18 x 16, 13½ x 15, 12 x 18, 12 x 14, 12½ x 12, 10 x 10 etc.

**Trotting:**—18 x 30 H. S. & G., 18 x 24 Erie City, 16 x 20 Chandler & Taylor, 14 x 24 Atlas, 14 x 14, Vertical, 12 x 18, 11 x 16, 10 x 16, 10 x 12, 10 x 10 Vertical, 9 x 12, 8 x 15, 8 x 12, etc.

### BOILERS:

**Horizontal Tubular:**—84 x 18, 78 x 16, 72 x 18, 72 x 16, 66 x 16, 60 x 16, 60 x 14, 54 x 16, 54 x 15, 48 x 14, etc.

**Fire Box:**—60, 50, 40, 35, 30, 25, 20, 16, 14, 12, and 10 horse power, etc.

**Vertical:**—55, 35, 30, 20, and 15 horse power, etc.

**Pumps, Heaters, Tanks, Saw Mills, and General Machinery**

THE RANDEL MACHINERY CO., 1732 Powers St., Cincinnati, Ohio

## THE ANTON VOGT DOWN DRAFT KILN

For Sewer Pipe, Drain Tile, all kinds of Brick and hollow Building Material. Cheap and simple. Don't fail to investigate this Kiln, it delivers the goods. To purchasers of Plans and explicit instructions of how to build, set and burn Kiln is my BUREAU of valuable practical information is **FREE**

ANTON VOGT, Ada, Okla., U. S. A.

## DIRECT HEAT

# DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**

62-64 William St.

NEW YORK CITY



## CLAY RECORD.

## WANTED

Superintendence in manufacturing plant; estimator fire-proofing; salesmen, brick and sewer pipe; salesmen, terra cotta; bookkeeper, machine building; private secretary to manager; salaries \$12.00 to \$40.00. Other positions in our 12 offices open. Write

HAFGOLDS,

205 Broadway, New York, or

1000 Hartford Bldg., Chicago.

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, cheap. Have several Brewer Mills for sale, and others.  
Engines, Rollers, Crushers, Drying Piles, etc. If you wish to buy or sell write

Brick and Tile Machinery,

Secor, Ill.

## FOR SALE

Our power Reapers in number one condition, used only but a short time, capacity 1000 per day. Ask for full particulars.  
American Enamelled Brick & Tile Co.

1 Madison Ave. New York

## NOTICE

To American Clay Machinery Manufacturers - A sound proposition for N. W. Alberta, Can. Articles of Association have been drawn by Messrs. A. Eason & T. C. Lyle Co., Ltd., for \$2000. of 20 shares at \$100 each at par. To equip a complete brick making plant on a field of 40 acres, proved at an feet and analyzed by the Henry Martin Brick Machine Mfg. Co. of Pa. E. & A., whose tests are satisfactory for a good sound brick.

The situation of the field is close to the Railway siding of Claymore, on the C. N. R., 6 miles from Vermilion City. The Bull-eye of the famous Saskatchewan Valley, South of Vermilion district, where brick are now selling at \$20 per thousand and in great demand at the time.

We desire to correspond at once with any firm who will put a fully equipped up-to-date plant on the field on an acceptance backed by fully paid stock, who may recommend a capable manager. To engage himself with our company at factory acre up stock. Address

ALEXANDER EASON,

Pioneer Builder and Contractor,

Vermilion, Alta.

K. V. Fieldhouse, Esq., L. T. Vermilion, Alta.

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Cost \$1000 to \$1000 per hour. Greatest bargain. Write for particulars.

GRIFFIN EASTERN LAY CO.,

30 Cortland St., New York

## FOR SALE

Three two-press Whittaker pressed machines. Each machine is complete with counter shaft and ready to run. Condition good.

One single press Whittaker machine, all complete and ready to run. These machines are for making pressed brick. Condition good. Special price.

4,000 soft pine pallets, each 30 inches long, 4 inches wide and 1 inch thick. Your pick of these pallets for six cents apiece P. O. Box.

We also have several engines and boilers, heaters, pumps and connections.

THE COLLUMBERT EQUIPMENT CO.,

304-306 Brunson Bldg., Columbus, Ohio.

## POSITION WANTED

I have had twenty-two years' experience in fire clay, brick, hollow brick building the gas retorts and settings. Understand making magnesia and silica brick; want position as superintendent.

W. T. J., care Clay Record,

Ill.

## POSITION WANTED

Young man desires position as Superintendent or sales manager, understanding stiff mud and dry press processes. Has traveled extensively.

TRAVELER, care Clay Record,

Ill.

## FOR SALE AT GREAT LOSS

One 30-H.P. portable boiler and engine. One horizontal "soft" mud brick machine and clay crusher, capacity 2,000 bricks a men and boy and one team, driven from clay tank, can be loaded, one-half inch pallets and dry sheds. One 100-H.P. portable furnace with grate bars, and all kinds of tools needed to operate a full plant. Constant need for plant here. Product on hand now. Old age reason for selling.

P. A. WOLFF,

Clair Rapids, Iowa.

## FOR SALE

One No. 2 Potts & Co. Clay Disintegrator. Used only six months. Price \$100.00.  
C. SOLFISHURG SONS,  
Aurora, Illinois

## WANTED

12 offices covering entire brick, clay and building material field. Positions open for office sales and technical men. Service confidential. Write, stating age, experience and location desired.

HAFGOLDS,

205 Broadway, New York City or

1000 Hartford Bldg., Chicago, Ill.

## BRICK YARD FOR SALE

Old established yard in good town of 3,000 people, with good country surrounding. 45 acres, good kilns and sheds. Good reason for selling. Call on or address

CHARLES MCNEAL,

Maryville, Mo.

## FOR SALE.



Right and left-hand One, Two and Three Way Switches of various gauges, radius and weight, rat at special prices.

THE ATLAS CAR &amp; MFG. CO.,

Cleveland, Ohio.

FOR SALE-CHEAP-New and re-laying rails, 18, 16, 10 and 8 pound. For prices, address

ATLAS CAR &amp; MFG. CO.,

Cleveland, Ohio.

## FOR SALE

Brick manufacturing plant, capacity 6000 per month dry press, small planing mill and lumber yard. Good shipping territory and an established paying business. Address

J. J. CARR OF CLAY RECORD,

Chicago, Illinois

## FOR SALE CHEAP

One semi-automatic clay cutting table, made by Wallace Co. One 100-H.P. disintegrator, made by Horton Co., one Kelle brick machine, all in good condition. Address

W. H. VANDER HAYDEN,

Ionia, Mich.

## FOR SALE CHEAP

Well improved tile and building block plant in good shape. Best of clay. Good market for entire out put. Well improved farm of 80 acres or 100 if desired. Address

A. J. GUILLE,

R. F. Co., No. 2, Curtice, Ohio

## WANTED

A good, practical man who thoroughly understands the manufacture of fire-proofing, using a stiff mud machine and tunnel dryer. Low material consists of a plain-grade plastic fire clay. Plant located in southern Ohio. No experience, age and full particulars. Address

FIREPROOFING, care Clay Record,

Chicago, Ill.

## WANTED

A thoroughly competent and reliable Superintendent to manage a stiff mud brick plant at Columbus, Mo. Capacity 25,000 a day, output principally pavers.

Must have A1 references, no other need apply. Address or reply in person.

EDWARDS BRICK CO.,

Columbia, Mo.

## PARTNER WANTED

A good reliable man of experience, with some capital to invest in and take charge of a new dry Press Brick Plant. Plenty of shale, and good market for all the brick.

Address

DENIS, care Clay Record,

Chicago, Ill.

## FOR SALE

Second-hand presses of different sizes and makes. Good machines and low prices.  
THE FERNHOLTZ BRICK MACH. CO.,  
Old Manchester Bldg.,  
St. Louis, Mo.

## BRICK AND TILE PLANT FOR SALE

At Carthage, Ill., Hercules soft mud brick machine; 3 H. Madden & Co. machine for making tile and stiff mud brick; machinery, sheds and kilns in good repair; 35 H.P. engine and 30-H.P. boiler, new. Address

W. E. LYON &amp; CO.,

Carthage, Ill.



Patent Registered  
R. A. MANT, 41 White St.

In later ads, call for  
No. 1 and No. 2  
4 Wheel, \$3.00  
8 Wheel, \$3.00  
Sold by all dealers  
BATTLE CREEK, MICH.

## SUPERINTENDENT WANTED

A superintendent for a stiff mud and dry brick plant. One desired that can get an interest in the company. SUPERINTENDENT.

Care Clay Record, Chicago, Ill.

## FOR SALE

One-half the stock of successful incorporated dry-pressed red brick company, carrying with it position of secretary-treasurer of the company. Still in Illinois. City of 40,000, is fully equipped, now running, prosperous and has established and growing trade in adjacent territory as well as in Chicago. Present holder is in poor health and has other business. \$7,500.00 will buy half the stock, cash or negotiable paper. Excellent chance for good man. Holder of other half of the stock is one of the best-known brick makers in Illinois. Address, U. S., care Clay Record,

Chicago, Ill.

## PALLET FOR SALE

We have a large number of second-hand wood pallets, size 34 by 10 inches. Can be bought cheap.

Address

MARTIN

Lancaster, Pa.

## POSITION WANTED

Position as Superintendent or Manager of Paving Brick Plant, thoroughly competent to take charge of construction and operating in every detail. Have good position at present, but desire change. References. Eastern plant preferred.

PAVER, care of CLAY RECORD,

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**REPORT OF THE THIRTIETH ANNUAL  
MEETING OF THE ILLINOIS  
CLAY MANUFACTURERS'  
ASSOCIATION**

**SECOND SESSION.**

The second session of the Illinois Clay Manufacturers' association was called to order at 10 A. M., January 15, in the Assembly Hall of the National hotel, at Peoria. An increased number of members were present.

The first paper on the program was "The Manufacture of Enameled Brick," by E. Hardy of Molineux.

**THE MANUFACTURE OF ENAMELED BRICK**

The manufacture of enameled brick is one of the branches of the clayworking industry and which has been thrown a mantle of secrecy and mystery. Although science has made great inroads into this Holy of Holies, the veil of the temple has not yet been wholly rent in twain and the so-called secrets are just as carefully guarded and protected as in former times. This, however, is an enlightened age and the secrets are no longer secrets except as regards the knowledge and experience necessary to use them correctly. A formula of any kind is useless to anyone if he has no comprehension of the elements involved, and the mutual affinity and the effect of one substance upon another under different conditions will vary greatly. Success may be attained for a time but cannot be counted on. Today's successes are attained, not by the secrets of the formulas, but by the knowledge and experience possessed by those that handle them. A great many failures in the enameled brick industry may be traced to the reliance that has been placed on secret formulas, which have worked well for a time, but under changing conditions, such as different clay, coal or material out of which the glaze and body are mixed, failure resulted from the lack of knowledge to locate the cause of the trouble.

Enameled brickmaking is, comparatively speaking, a new industry. It was not until 1803 that this ware was made with any great amount of success. Prior to that time, its manufacture was attended by repeated failures or the product was of such poor quality as to meet with little favor from the users. Nearly all the enameled brick used in this country up to 1803 had been imported and the consequent high price prohibited their use to any great extent. The demand for brick that could be bought at a reasonable figure had grown to such an extent that the home brickmakers became interested and suitable clays were sought. As a result of investigations made, the fall of 1803 saw the last imported brick used in the city of Chicago. It had to be

clearly demonstrated that the home product was as good as the imported, and to do this it was subjected to different tests, the principal ones being the freezing and crushing tests. In a few cases the body of the brick gave out but the enamel could not be moved.

From that time business has slowly but steadily grown. Larger quantities of enameled brick are being made each year but nowhere near as large a number as is manufactured in the European countries. The output of the Leeds, England, district alone is nearly as large as the output of all the factories in this country put together. Up to 1803 the enameled brick industry was not considered of sufficient importance to be classified in the statistics of the clay working industry issued by the United States geological survey, but it has grown large enough by this time to deserve special mention. In 1808 the output was valued at \$270,000; in 1809 at \$320,000. In 1900 there was a decrease of about \$4,000. In 1901, however, there was the largest increase of any year, the figures being \$463,700, an increase of \$140,000. There was a steady increase up to 1904, when there was again a slight decrease, but since that time there has been a steady increase, the figures for 1906 being \$773,304. I should not be surprised to see \$1,000,000 valuation for the product of the past year. The use of enameled brick is becoming more common and the demand is greater. The quality of the brick is better than ever and the price is lower. They are unexcelled where light and cleanliness are necessary. For light courts, engine rooms and power plants, for swimming pools and depots, they can be used to advantage. They can be made in all colors and shades and beautiful effects can be obtained. They are high priced and, I think, is the only thing that prevents their general use.

The state producing the most enameled brick is probably New Jersey, which has the most factories. At the time of writing, five plants are devoted entirely to the manufacture of this product. Another one is being built in California, which will bring the total up to six. Other clay working enterprises make enameled brick but only in small quantities, the principal output being pressed brick. These five factories have been running for 10 years or more and other factories have started but have failed for one reason or another.

Your secretary asked me to give you a short history of the industry with a few details of the method of manufacture. To go fully into every detail would require more time than I have at my disposal this morning. It is like any other branch of the clay business; it has its ups and downs, and the "downs" generally come when least expected. But

## CLAY RECORD.

it also has the bright side, so I will endeavor to give you some idea of the different processes used. It is very true that with all clay goods the finer they are, the more careful we have to be as to the character of the clay which we use for their production. So it is with enameled brick; the first great care is the clay. If this is not right, it would be useless to start, and the clays suitable for these brick are not found in abundant quantities. Upon the kind of clay you have will depend altogether the process you use—whether you make it by the dry pressed or plastic method, the kind of glaze to be employed and whether you set the brick open or closed. The first thing to do, therefore, is to learn all about your clay before doing anything else.

The processes in general used are known as the one-burn and two-burn processes. Enameled brick have been made by the three-burn process, but the cost of manufacture is too high and the best reason of all is that it is altogether unnecessary. The one-burn and two-burn processes may each be subdivided into the high-fire and low-fire processes, the open and closed setting and so on. Any one of these may be chosen or parts of all of them. Nearly all the English brick are made by the high fire process and makers claim that a good brick, one that will stand up under any and every condition, cannot be made by any other process and as proof point to the excellence of their product.

If there is a high and low-fire process there must be a dividing line between the two. If this were not true the terms would have no meaning. This line comes between cone 02 and cone 1. That is, all temperatures below cone 02, would be low-fire and all above cone 1 high-fire. If we consider first the clays that can be used at high-fire temperatures, we shall at once see that nearly all red-burning clays would be ruled out, and justly so, for red clay is the poorest material out of which enameled brick have ever been made. It is altogether unsuitable and ought never to be considered. Enameled brick have been made of red clays but have always been considered a poor quality. They have generally been covered with a tin glaze and could not be made any other way. For the manufacture of enameled brick, then, the only clays worth considering are of a buff or a cream shade. There are plenty of these clays that may be used in the low-fire process but to make them this way the glaze will have to be either a raw-lead glaze or a fritted glaze. The objection to the lead glaze is that the lead is a poison and must be handled very carefully. Lead poisoning became so general in the potteries and brick works of European countries that it became necessary to make laws prohibiting its use in raw glazes. This made the use of frit essential. Boracic acid may be used, but as this is a soluble compound, it must be reduced to an insoluble form before it can be employed. This is true also of the compounds of Na and K. Fritting is the only way. This all adds expense to the glaze. Another thing about these low-fire glazes is that they are more apt to craze and flake off than the raw-feldspar glazes. The only thing that I can see in favor of the low-fire process is a small saving in fuel.

Without the use of lead or some of the soluble fluxes it would be impossible to make a glaze that would mature under cone 1. Seger in Vol. 1, page 439, says that lead should not be used in a glaze maturing above cone 1 and gives as his reasons that "above this heat it is not possible to work with a lead glaze as lead has the great disadvantage of volatilizing easily under the influence of fire gases. Through this peculiarity, the glaze grows constantly more acid, making it more difficult to fuse and hence fails to come up bright." So it can readily be seen that to make a brick with a raw glaze, we must have a clay that will vitrify above cone 1. This clay must be looked for among the No. 2 fire clays and not all, or nearly all, of these are satisfactory.

The clay that makes a good enameled brick is not easily found. I know this from experience, for I have tested a large number of clays from different parts of this and neighboring states, and have not found very many that I considered satisfactory. One way of getting around this is to mix two or more clays together in varying proportions until the desired mix is obtained. One clay might be too "fat"; another too "lean," but by mixing these together an available satisfactory material might be obtained. Again, mixing grog with some clays would help. If the two-burn process was employed this would be one way of getting rid of the spoiled biscuit brick. Some clays work better in the dry-press than in the plastic machine. In some cases the reverse is true and this brings us to a comparison of the two methods or processes. As I have said before the one-burn process and two-burn process are those in general use. The terms are self-explanatory. The one-burn process consists of putting body and glaze on the unburned brick and then firing and finishing them at one burn. The brick will have to be made by either the stiff-mud or soft-mud process, the stiff-mud being preferred and a repress being necessary. The glaze and body may be put on while they are soft or the brick may be dried bone dry, then dipped; or the body may be put on while the brick is soft, then dried and the glaze put on just before going to the kiln. One objection to dipping brick while they are soft is that they cannot be handled without leaving finger marks on them. Another reason is that the glaze or body remains soft so long that it is liable to be covered with dust and then when burnt this shows in black spots.

The plastic brick may also be used in the two-burn process. We have no choice with the dry-pressed brick. These must be made by the two-burn process. If dipped in the clay state, the expansion caused by the addition of so much water results in the cracking of the face and its falling away from the drier portion of the brick. The process is the same as for any dry-pressed brick up to the time the enamel is applied. If made plastic the brick may be set straight from the drier, or the body may be put on and burned in the first burning. Then only the glaze would have to be put on for the second burn.

In considering the advantage of one process over another, the first thing to be observed is the difference, if any, in cost. This is certainly in favor of the one-burn process, but not to a very great extent. The extra expense of setting, burning, drawing, labor and fuel in the two-burn process would not cost over \$5.00 per M at the outside. If we get to per cent more good brick by this process than by the other, it would pay to use it. It is claimed by some makers that a large per cent of first class brick can be obtained by the two-burn process. This is true if you figure the brick in the finished kiln alone, but if you consider the brick made from the machine as a basis a different result is obtained. If we make a thousand brick at the machines and biscuit them, we would probably lose from 10 to 15 per cent in the extra handling and burning. Then if we got 85 per cent first class brick from the finished kiln we would only be getting 85 per cent of 850 to 900 brick instead of 1,000. So we would be doing just as well if we got 75 per cent by the one-burn process. I have mentioned the loss by biscuiting. We all know that the more we handle brick the more spoiled brick we get.

One of the conditions on which we sometimes get orders is time of delivery. If we are running at full capacity and selling all we make there is no chance to stock brick. Therefore it makes a difference whether we can deliver in two weeks or four. The one-burn process has the advantage here, for if we cut out the time needed to biscuit the brick we reduce the time from clay-bank to stock-shed from one-third to one-half.

It must not be thought, however, that all the advantage is with the one-burn process. A brick that has been biscuited has already been subjected to considerable shrinkage and all of the organic matter has been burned out. It may also be burned up to the point of vitrification and a body and glaze applied, maturing at a lower temperature than is needed for the burning of the brick. If this is not intended, it is not necessary to burn the biscuit brick so hard. If half of the shrinkage is taken out it will be enough. They ought, however, to be burned up to this point without making rough edges and broken corners. When burned to this point they will absorb moisture very readily and can be taken to the enameling rooms, dipped, knifed and set at once. It would be impossible to do this with plastic brick, as they absorb the water from the glaze and body very slowly; the face becomes soft, and they have to be partly dried before brushing and setting. In one other respect the dry-pressed brick have the advantage. This is in the finish.

A repressed stiff-mud brick can never be made with the same perfect face as the dry-pressed brick. All repressed brick have more or less of a wavy-face effect. This is not so noticeable on a facing brick. But when the same brick is covered with a bright glaze these imperfections are shown up in a very clear manner. With the dry-pressed brick, properly dipped, there is no waviness. The wave effect is noticed in the plastic brick whether burned once or twice. The greatest advantage the one-burn process has over the two-burn process is in the cost of equipment. Under the two-burn process more kilns would be needed to handle the same output than under the one-burn. A kiln, holding 45,000 to 50,000 English-size biscuit brick would hold 25,000 to 30,000 of the same brick when set as finished ware. These brick might be set in saggars. Then the same kiln would only hold 7,500 to 10,000. Brick are made this way, sometimes, but where the profit comes in I have never been able to find out, for we would need about two biscuit kilns to three finishing kilns, and the cost of additional kilns is an important item.

What has been said certainly seems to favor the one-burn process and this is the cheapest way oftentimes. But when all has been said and done, the way they are made will depend entirely upon the clay you have. I could proceed and tell you just what kind of a clay is needed and you may be able to find just such a clay which, when tested, will be what you do not want. What I am going to say about clay is only in a general way.

The clay to be right must burn to a light color with a shrinkage of not over one inch to the foot. It should be free from iron for if it has too much it is liable to burn through the face, giving the brick a mottled appearance. Too much lime is also bad. If made by a stiff-mud process, the clay must be free from laminations. The proportion of alumina to silicate should be as one to three. The clay should be able to keep its shape at a higher temperature than the point of vitrification. That is, there should be a wide temperature range between the point of vitrification and fusion.

I give here the analysis of some clays that have worked well. The first is Leeds' clay and the second is Stourbridge clay. These are merely for comparative purposes. For the "Manufacture of Glazed Brick" by Greville Montgomery and for the remaining five to the "Report of the Geological Survey of Illinois."

President Pratt: We have listened to the reading of this valuable paper on enameled brick. If there is any discussion of the matter, we would like to hear from you.

Mr. W. P. Blair: (Addressing Mr. Hardy.) You use the expression "frit work;" "frit work glaze" and "lead work glaze." I think there is hardly any one here who understands the difference between the two. Will you explain it?

Mr. Hardy: There are two classes of glazes used, the raw and the fritted glaze. A fritted glaze is one made up with some soluble matter in it, such as boracic acid and borax or the carbonates of potash or sodium. To get these into an insoluble form, this soluble matter is fused with part of the other materials, then ground to a powder, mixed with the balance and used. Lead may be used in either a raw or a fritted glaze.

President Pratt: There being no farther discussion we will take up the next subject, "The Qualifications of a Factory Superintendent," by Marion W. Blair, of Terra Haute, Ind.

#### THE QUALIFICATIONS OF A FACTORY SUPERINTENDENT

Shakespeare says, "I would sooner teach twenty what were good to be done than to be one of the twenty to follow mine own teaching." Not only does that hold true in reference to a superintendent, but it would probably take twenty superintendents to do the things that any one of us might see to be done on even a moderate sized plant.

A comparison might be drawn between the superintendent and a horse. Often the needs or the individual taste of his owner determines his value. The owner rarely condemns and virtues alone are published. If he balks, kicks, or lays down in the harness, it is best policy to let a new owner discover these traits. He may have been bought because he paced or trotted or jogged or walked for each gait has its admirers and often the one sought for quality over-shadows all faults. However horses are bought or hired to get there and carry a load and so are superintendents. Their destination is a profit and the load one of the most trying jobs in the whole clay working business.

The successful operation of a moderate sized plant involves a general knowledge of many engineering subjects, as well as ability to organize and systematize a working force and a certain experience in general business. The superintendent must be able to handle steam, air, electricity and to direct and control many chemical changes. He must have some knowledge of construction and be familiar with foundry and machine shop practice. In fact I doubt if there is another manufacturing business in which there is required such a variety of general scientific knowledge and which is so dependent for success on little things of a scientific nature and yet in which this knowledge is so little valued or appreciated.

The mere handling of men is not superintendence. The successful superintendent of a large plant comes little in direct contact with his men. Discipline he must have, but he should preferably be an organizer and leave the handling to foremen in different departments. The essential thing in the superintendent is to watch his foremen, and see that each produces the greatest amount of work from the fewest number of men, or, rather, for the fewest number of dollars.

An incompetent superintendent often hides his inefficiency and lack of ability to organize behind the contract system. He does not seem to realize that broken car decks and wrecks on the transfer track adds to the nominal 30 or 35 cents cost of his setting. That every No. 2 brick set does the same thing. The first by reducing the number of brick actually set, yet counted, and the last by a reduction of profit. While he may pay his loaders 40 cents a thousand, yet it is comparatively simple to add a cent or more by careless sorting or breakage. I have actually seen No. 1 paving brick loaded in a car of culls, and every one so loaded meant the throwing away of nearly one cent of the company's money. Not much money, I will admit, but I should hate to risk changing a five dollar bill into copper cents and scattering them through the lobby of this hotel with the expectation of picking them up again tomorrow.

Clay cars partially filled and dryer cars short mean thousands of dollars paid out in the course of a year for goods

which are not delivered. The difference in records and shortage in the inventory is accounted for by breakage and is thrown on the bat pile on the yard and charged to profit and loss in the office.

A machinist seldom makes a good superintendent. He is inclined to think that if he keeps up the machinery the balance of the yard will run itself. Still the superintendent must have a general knowledge of foundry and machine shop practise. He must be able to determine when a machine is worn out, and equally important, when it is not. Often a machine may be continued in service by some repair or change in arrangement which makes it quite efficient. It is, however, almost criminal to run wornout machinery. It lessens the per cent of No. 1 ware, lessens capacity and wastes power. The junk to be found in operation in plants throughout the country, and the serviceable machines in the scrap pile would lead an unprejudiced observer to believe that this quality of distinction was lacking in many superintendents.

Nothing but a No. 1 product should be allowed to leave the machine room. A brick or drain tile never improves in shape or structure in the kiln, and as the burning is the vital point in the manufacture of clay ware, it should be given every advantage. The superintendent must understand the burning of the ware in hand. He should understand and be able to direct how the various ware should be placed in the kiln, and how the various stages of firing should be carried on. He should depend on his burner, but should never be at the burner's mercy. He should be familiar with the various forms of kilns, and their construction, operation and maintenance.

The superintendent should know something of the uses of the ware he makes, and should be able to talk intelligently to possible customers.

Further, he should be ambitious to become more than superintendent, part owner, perhaps, or head of a new enterprise. The clay working industry is destined to grow. The certain exhaustion of our lumber supplies and the constant adaptation of clay ware to new uses, and the general failure of substitutes make the establishment of new plants a necessity and they will be owned and managed in large part by the superintendents of today. The success of the superintendent, however, is dependent to a large extent on his relations with the management under which he labors. He should enjoy the fullest confidence of his employers, and should be aided in every way to solve his various problems. Often you will find dissatisfaction with a superintendent because his costs are high, and yet he is not furnished a means of knowing what these costs are. Accounts should be so kept that the comparative cost of any department for a given time can be seen at a glance. Supplies, fuel, etc., in cost per unit of ware should be accessible to the superintendent at any time. He can then better regulate and distribute his labor and locate leaks in the supply account, and overcome excessive repairs.

Then, too, many of the best superintendents are overloaded. Time keeping, cost distribution, shipping and looking after supplies will generally keep one man busy. The superintendent should only supervise such work. His time is too valuable in other directions. If you find him taking a man's place in the setting gang or loading a wagon, you will find things dead wrong on some other part of the yard. Some managements, however, consider such labor by the superintendent as a gain, and he is considered a hustler, because he saves a man. When in fact it is like paying a bricklayer 70 cents an hour to lay brick and letting him wait on himself, when tenders can be hired for 15 cents.

In order to be progressive, the superintendent should attend such meetings as these and his attendance should not only be made convenient but he should be urged to attend.

He may in so doing help some competitor but he will himself be benefited and will promote the interests of the business at large, and so add to the general welfare and comfort.

The President: The qualifications of a superintendent may be important to all the members. If we are acting as our superintendent, we had better see what our qualifications are; if we want to get one, we want to know how to pick out a good one.

Mr. Purington: I think Mr. Blair has so fully described the necessary qualifications that there is not much to say. But it differs in different plants. We had to change some of his theories. But on the whole I think his paper is about as good as it could be.

Mr. Search: The superintendent or the manager tries to make brick in the office window in a great many cases.

Mr. Hammerschmidt: I am my own superintendent and manager, and think a pretty good one.

The President: Mr. Albert Kiefer, an architect, of Peoria, was to have read the next paper on "Present Demand for Brick in Architecture," but I have been told that Mr. Kiefer slipped and broke his leg and I am sure that the members extend their sympathy and condolence to Mr. Kiefer in his illness. The paper was to have been read by Mr. Deering, but up to this time he had not seen the paper or Mr. Deering, so I will pass for the present to "Some Work of the State Geological Survey on Fire Clay," by Edwin F. Lines, of Urbana, assistant geologist.

#### SOME WORK OF THE STATE GEOLOGICAL SURVEY ON FIRE CLAY IN WESTERN ILLINOIS

Clay investigations by a geological survey go a step further, I suspect, than those usually undertaken by clay operators. The operator thinks of the quality and the accessibility of a clay, but gives little or no thought to the geologic bearing of the deposit. The geologist, however, because of his habit of studying the relationship of the rocks asks immediately upon seeing a deposit of clay, what formation it belongs to, and he believes that when searching for undeveloped material this is very important.

We all know that a clay bed that in one locality is first-class for certain purposes is inferior or worthless for those uses in another, but we must take into account the fact that the clay deposits that underlie coals were usually made in large bodies of water where conditions during the deposition were comparatively uniform, and for that reason clay that is No. 2 fire clay under a certain coal in one locality is apt to be a good fire clay under the same coal in another locality. The geologist then, when he has observed that at a certain locality a clay is being used extensively for a particular purpose, makes careful note of the stratigraphic relationship and sets out to find duplications elsewhere.

Work of this character has been begun by the state geological survey in the western part of Illinois. Excellent deposits of No. 2 fire clay are being worked there but at present most of the operating is being done at three localities, viz., Colchester, Drake, and Whitehall. We know the value of the clay at these points, but we are not so well informed as to how much clay of this quality occurs elsewhere. At the locations where this clay is being worked the clay appears to lie at the bottom of the coal measures, but the bottom of the coal measures in Illinois is rather indefinite, so that what seems to be lowest coal in one place is not the lowest in another.

In order to determine the relationship of these coals, Dr. Bain, our state geologist, arranged to have Mr. David White of the U. S. geological survey make a study of the lowermost coals in this region. Mr. White, who is one of the best authorities in the country on the fossil plants of the coal bearing rocks, made several visits here during 1906 and

1907, and examined a number of coal and clay sections between Rock Island and St. Louis. As a result of Mr. White's studies we have learned that No. 1 coal of Rock Island and Henry counties is the same as the seam designated No. 2 in McDonough county, and connected with this discovery is one of special interest to clay workers.

Associated with the No. 1 coal of the Rock Island sections there is a bed of limestone which can be traced southward with the coal and clay. This limestone possesses a certain peculiarity that is very important from a geologist's standpoint. When it lies exposed to the weather it breaks down into pea-like fragments, and this characteristic enables us to know immediately that it is the limestone that is associated with the coal and clay in which we are interested. By its aid Mr. White proved that the clay deposits at Clochester, Ripley, Exeter, Winchester, Aley, Drake and Whitehall are all part of the same geological formation. Going farther south he found this limestone above the clay at Golden Eagle, proving that also to be in the same horizon. Finally, going to St. Louis and visiting the Cheltenham deposits he found this same peculiar limestone above the clay there, thus connecting the famous Cheltenham clays with the fire clays of Illinois.

This immediately raises the question whether we have yet discovered the full usefulness of our western Illinois fire clays. Some of the clay now in use is No. 1 quality. A sample collected at Drake is designated No. 1 fire clay by Purdy and Moore in their paper on the Pyro-Chemical and Physical Behavior of Clays, printed in the last volume of the Transactions of the American Ceramic Society. May we not, then, by exploring this geological horizon more thoroughly find clay yet untested that will rival that across the Mississippi river?

Late last summer I also examined the deposits at most of the localities that Mr. White visited, and collected samples to test in the laboratory. I am expecting that the results of the tests will give interesting data on the variations of this clay, and that they will also make a valuable basis of comparison for further work on the clays of the state.

Mr. Joannis: I would like to ask a question which hasn't anything to do with the clay business; that is, not directly. Now just thinking about those things, how far down do you go in some places where the clay is better than it is according to depth? Have the coals of the lower depth a greater heating value than those nearer the surface?

Mr. Lines: There is a good deal of data available concerning the heating value of coal. I don't know that it has been studied in that light. I never heard that question asked before. I doubt, though, if that is true; but I cannot answer definitely.

Mr. Joannis: It would be interesting, if there was.

Mr. W. P. Blair: I would like to ask one question on the paper. I thing Mr. Lines intended to tell us—but I did not catch fully what he meant, or did not get clearly in my mind what was stated, at any rate. The question is: Is this fire clay bed, of which you speak, as found in the north part of the area and extending on down, which possibly connects with the ones at St. Louis and the ones on the Mississippi, is that clay found below all the coal veins? In other words, there is no coal below that, is that true?

Mr. Lines: There is no coal below it in the north. In the southern part of the area I was discussing you often find irregular beds of coal.

Mr. W. P. Blair: But geologically speaking there is no coal found below that range?

Mr. Lines: No; it is at the bottom of the coal bearing series of rock.

Mr. W. P. Blair: Then I would like to follow that up by another question. The quality of these clays that you speak of, are they of a high quality? Are they regarded so far

refractory purposes, or for such purposes as the first paper read this afternoon spoke of? Are they high in quality for lack of shrinkage in the manufacture of clay products other than refractory products? Where does their use lie?

Mr. Lines: The clay that is used at present is used for stone ware and sewerpipe.

Mr. W. P. Blair: From this vein?

Mr. Lines: From this vein, yes. The sample I spoke of as being No. 1 fire clay was taken in the lower part of the bed in the pit at Drake. I don't think that they use that section of the bed for any particular purpose. They mine more of the clay above it than they do that particular part.

Mr. Hardy: The clay workers of the state do not know the value of the clay that is in this state. I have been at Moccasin for fifteen years and I have tested a great many clays, but it is only during these last three years that we got anything out of Illinois that suited our product. But going into the western part of the state we find that there is a lot of clay that is as good as any in the country. The New Jersey clays are spoken of as being good clays, but there are clays there in that district that are as good as any in New Jersey.

Mr. W. P. Blair: There is one other question I would like to ask the gentleman. This lecturer over here, Mr. Hardy, from Moccasin, has commended the value of the clay from this particular vein. I am speaking of this lower clay. We want to know if it is not generally true that the vein of fire clay that is found below the coal measures, that vein of which you spoke that is entirely below the coal, if it is not true that that particular vein throughout all parts of the United States is freer from other ingredients, like iron, etc., that contribute to a disadvantage in the use of the clay, that is, if our best fire clays for these purposes is not always in this lower vein below the coal measures? That is what I would like to know.

Mr. Lines: I do not know the clays of the whole United States, but I know that in the east the flint clay deposits, the best flint clay deposits, are usually from a horizon that corresponds roughly to this. Of course you cannot draw a plane that will go through the same stratum right across the country. The conditions are different in the eastern coal measures, and the coal is deposited in a different basin. At the time in the earth's history when the coal was being deposited there was a ridge of higher land between the coal basin of the middle west, and the coal basin of the east, and it is not possible to follow the same veins across. They are entirely separate. But in a general way the lower clay veins in the east are the more valuable ones. The Boliver clay, however, is an exception, so you cannot draw a hard and fast rule. The Cheltenham clays are unique. There is no other plastic clay in the country that I know of that is suitable to use in making glass pots.

Mr. W. P. Blair: What I was trying to bring out if possible is this: Whether there was any rule that you could go by. Now in the locality that I am best acquainted with, the fire clay conditions are nearer regular. The vein of fire clay that is below the second vein of coal, going from the surface down, is usually, there in that locality, the freest from iron and other substances that would make it work to disadvantage, whereas it seems from the statement here that there is a good vein of fire clay in Illinois below all coal, that is as far down as you would expect to find fire clay at all. What I want to know is if we are generally expected to find better fire clay the lower we go after it?

Mr. Lines: I do not think that that rule applies in all cases; it may be the case, but you cannot say that you should expect it.

Mr. Hardy: I do not believe that that is true, that the lower you go down the more free clay is from iron and such

things that you consider injurious. The Drake clay that Mr. Lines speaks of, I have seen the mine and there is a plastic clay of ten feet on top and then there is this hard ten feet of fire clay, and the sandy No. 1 fire clay seems to be at the bottom and the plastic clay on top. This No. 1 Drake is very good clay.

Mr. Matt Hoots: I am interested in this subject as I am working at Alsey. Mr. Lines, I believe, was down to visit me last summer. We are working this clay, we are placing it in the kilns along side of the Cheltenham clay, and my experience is that it stands, if anything, a better test according to heat than any other. But I find an objection to it. It is brittle. It does not seem to hold its body as well as others. What is the cause of this?

Mr. Lines: Fire clays are frequently lacking in plasticity. In that case you have to mix plastic clay with them.

Mr. Hoots: What per cent?

Mr. Lines: That depends. You have to determine that by the quality of the clay that you are working with.

#### DISCUSSION ON FREIGHT RATES

President Pratt: We have on our programme a discussion in regard to freight rates. We would like to learn the working of the different rates in different sections of the country. There seems to be a demand on the part of some, at least, to know more about them. If any one has any questions to ask, we will try to get an answer.

Mr. Purington: I think it is a difficult matter for this association to get very much light on the subject of freight rates when the railroads themselves don't know where they stand.

Mr. Joannis: Fifteen months ago I undertook to prepare an article on freight rates, not particularly for this convention but for any convention. For that purpose I went personally to the officers of over forty railroads. I had in mind to prepare a paper which should establish a uniform classification for all clay products. When I say uniform, analysis of the first two clays I am indebted to a work on I do not mean to say that they should all be equal, but I mean to say a uniform series of classifications of clay products so that there would not be any unjust discrimination in clay products on any of the roads; and after having classified them to establish a freight rate for the products for a given distance. So I obtained all the different freight tariffs I could. I sat over them night after night, and what I got out of them was just about as much as Mr. Purington has got, as far as getting any result from the data. I still have not lost my main object; I still believe that is possible; I still believe that it is up to this association, or some members of the association, to get together and see where our present system is lacking, see where injustice is manifest in any one branch of the industry and work out a satisfactory classification of clay products on a basis offering equitable arrangement to the railroads. Such rates would apply equally in every direction so that there would not be any discrimination on the part of the shipper from one town, and vice versa.

I still intend to work for that. I think if we should get this plan and get it printed and submit it to the railroads as the plan for our industry, and say "this is what we would like," and get it approved by them, it would solve a great many problems. But from the present tariff system it is a hopeless question now.

Mr. Purington: The National Paving Brick Manufacturers have had this matter up for several months. Perhaps all of you are familiar with the decision known as the Stowe-Fuller decision, at Cleveland, where the Stowe-Fuller Company was charged a higher rate on fire brick than they were on building or paving brick, and the matter was placed in the hands of the inter-state commerce commission, and the inter-state commerce commission decided, after an investi-

gation, which did not take in very many of the brick manufacturers, outside of the fire brick manufacturers, they decided that all clay products should be on the same basis.

The rate from Chicago to New York had been 25 cents on fire brick, 22½ cents on building brick and 20 cents on paving brick. The railroads immediately put into operation the rate of 22½ cents on all clay products from Chicago to New York, which, of course, affected all of the different rates between those two points. The National Paving Brick Manufacturers' Association employed two gentlemen, one of them an attorney, to enjoin the railroad from raising that rate, and they were successful in enjoining the railroads from putting that rate into effect until after the first of January.

We went through a great many different discussions at various meetings of the Paving Brick Manufacturers as to whether the inter-state commerce commission was right in its decision that a high-grade fire brick should be rated with the common building brick, and there was some difference of opinion. In the Stowe-Fuller case they showed that there were certain brick, made in the same kiln, made out of the same material, not all high-grade fire brick, but a brick practically made out of the same material, and part of them took one rate and part another. As the case now stands, the attorney has been instructed to try to have that decision of the inter-state commerce commission changed back to where it was originally. That is one of the things that they are going to try to do, and also to reduce the rates on all brick products. I do not know how they will succeed. I saw Mr. Campbell, who is the attorney, a few days ago. He said that he had all the papers ready and expected to bring it before the court before long. I think it is a pretty hard matter for us to decide here unless we do it in a unit. Of course the paving brick manufacturers are working for their own interest, but this Stowe-Fuller case has made a great difference among the paving brick manufacturers.

Mr. W. P. Blair: I do not know whether this question will ever be finally settled to the satisfaction of everybody or not. Mr. Joannis evidently found from the examination of the different freight rates by the different railroads in this country that different railroads prior to this decision had different methods of classification. I have recently been spending what might otherwise have been my idle hours evenings in examining the same question, and I find that here is a railroad passing through a certain section of country where they make two kinds of brick. One is common brick and the other is high class paving. No fire brick made. That railroad has made a rate on common brick and on paving brick, it would make a rate on two grades accordingly. Here would be another railroad through another section of the country where there was nothing but paving brick, and, say, fire brick. Then they would make a rate on paving brick and fire brick. Then we would find another railroad that had a custom that grew out of the custom of manufacturers of brick on that railroad. They shipped the brick in two ways, packed and unpacked, and so that railroad would classify accordingly. But now we are up against the inter-state commerce law and sooner or later, if the decision that Mr. Purington spoke of is changed, why then there must be established by that commission some kind of a classification that will apply alike all over the country. Now we hope the outcome of that may be that it will be established upon a just and equitable basis to all concerned. If it remains as it is now written upon the books, the railroads are obliged and forced to put into effect a rate common to all. We would enable the Monmouth factory to ship the very highest class of brick and the costliest brick that they make just as cheap as they can their "culs" from their common manufacture. There should not be and cannot be any discrimination. I do not suppose that any of us in

the outcome of this whole matter will be entirely satisfied, or that our particular views will be met.

I am convinced myself that there should be four classifications in this country, although men in whose judgment I have profound respect differ from me somewhat on this question, but I believe that the classification ought to be upon a basis which ought to read, "paving brick for paving purposes;" which ought to read, "face brick shipped packed;" which ought to read, "brick unpacked," and then it ought to read "fire brick for factory purposes." That gives four distinct classifications, and then upon that classification of course the railroad must make their basis of freight rates. It is at the present an absolutely unsettled question in this country and will remain unsettled for some time to come. The freight agents, the general freight agents, who make Pittsburg the center in eastern shipments, have already given a tariff which they conceive to be proper from the ruling of the inter-state commerce commission. From no other part of the country has this promulgation of these freight rates taken place, but in the east they are urging the general freight agents in the west to proceed with a tariff based upon the finding of this commission as it now stands. That we may expect within the next three or four or possibly five months. The disposition of the railroad people in this part of the country is to hinder and delay the promulgation of this tariff which certainly must be unjust and will be unjust to the brick interests until possibly the inter-state commerce commission has changed its decision.

Mr. Purington: I would like to say further on the Stowe-Fuller decision. I do not see why a carload of Teco ware would not be worth more than a carload of common brick. Under the present decision that would be the ruling and the rate would be the same.

Mr. Mamer: If that rate, according to that decision, as Mr. Purington suggests, should stand, why, in that case, then drain tile would be the same as common brick.

Mr. Purington: Certainly, the same as fancy pressed brick.

Mr. Mamer: At the present time the Wabash River Co. makes a difference of about 30 per cent. They charge us that much more on drain tile than they do on brick.

Mr. Purington: That is right, don't you think so? (Laughter.)

Mr. Mamer: They do make that difference. Where they make the lower rate for brick we have to load a carload capacity, where on drain tile the minimum must be 30,000 lbs. Of course, that is an item, too. But at the same time I believe that a just freight rate ought to be based upon both the weight and the bulk of the article, and cost. That is, in value. I do not suppose that there is any commodity that there is a cheaper rate on than there is on coal, and I do not see why any railroad company could not handle a common building brick every bit as cheap as they can coal. They have got to do it. They will haul coal from the southern parts of Illinois on the basis of \$1 a ton. They will haul it into Peoria for 75 cents a ton. From the Mount Olive district to Chicago they charge 75 cents a ton. We are seventy-two miles south of Chicago and they charge the same rate. They used to charge us 10 cents more until about a year ago last August, when something came up and they made the rate the same. There were some coal dealers south of us who sent in their bills for some four years back and made them pay back the difference. I can not see exactly where we are at. I would like to ask this question of men who ship over different roads. Do the various roads as a rule charge the same rate for the same distance on the same commodity? Is that the rule?

Mr. Purington: Only in larger cities. I think the rate from Chicago is practically the same.

Mr. Mamer: You ship over two or three roads?

Mr. Purington: Two.

Mr. Mamer: Is the rate practically the same, say, where you ship over 100 miles?

Mr. Purington: Where both roads run into the same town. There might be a few exceptions, but that is the general thing.

Mr. Joannis: Mr. Mamer, you brought in the question of the cost of the ware. This question has not been developed from the cost end of it at all.

Mr. W. P. Blair: You take a carload of glassware, of cut glass, and that may be worth \$5,000. You take a carload of drain tile that is worth \$100. Would it be just to haul that for the same? From the very fact that one carload is worth \$5,000 and the other is worth \$100 isn't it worth more to the railroad to transport that by reason of the cost, because that involves a question of hazard, which has always been considered in transportation in this country, and will be considered in the future, because if your carload is lost, on the one hand, what the hazard amounts to in the railroad paying for it. There must be a discrimination on that account.

Mr. Joannis: Yes, but not a discrimination of the rates.

Mr. W. P. Blair: Yes, sir.

Mr. Joannis: I disagree with you, and I will explain why. The question of transportation involves two factors only. That is, weight and bulk. Now, as regards the railroad, it does not matter an iota whether the freight cost 5 cents or \$5,000.

Mr. W. P. Blair: Certainly it does.

Mr. Joannis: Wait a moment. I want to make my position clear on the subject. It does not make a difference to the railroad as a carrier any more than it makes a difference to the mail carrier whether the letter that he hands to you in the morning contains a check for \$1,000 or whether it contains the joyful news of the death of your mother-in-law. It does not make any difference. He is a public servant and he hands that letter in, which is carried at a specified rate. It does make a difference in this regard with the message. Consider the two ends of the service. You have your sender and your receiver. Questions of the consideration of the value of the article carried must be dealt with between the sender and the receiver, not with the carrier, as long as the sender and the receiver do not impose upon the carrier the responsibility for loss and damage in transit.

We have here two factors to consider in the carriage. We have a question of weight and of bulk. A brick we will take as a standard of weight and bulk combined because they represent a known unit and therefore we can readily establish a basis for the known unit. Here is our unit of weight and bulk as a unit of measure. The same as we have a gold piece as a standard of money value. Now, we will take our friend Gates' Teco ware, which is greater in cost, not necessarily greater in bulk because you can get a small bulk that is valued at a high price. You have to have a basis, merely for carrying purposes, of weight and bulk. Your glassware may cost \$50,000, not on account of the cost of the glass itself. It may be the color of and work on the glass. It is a question of manufacturing skill that makes that article worth more.

Here is the basis I would work on. Let all carrying rates be based upon these two factors, that of weight and bulk, as far as the railroad is concerned. Now, then, the shipper desires to send a \$50,000 car of glass to a certain point. As far as the railroad is concerned, they are using exactly as much intelligence and labor in transporting that glass as common freight. But in England they would do it this way: I was in the glass and pottery business quite a good many years when I was in England. They way they work it is this. Suppose I went to the pottery to buy my ware and I



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bought a high-grade china tea set for Christmas. It was up to me whether I would pay the railroad anything to accept responsibility on that car or whether I would not. If I did not want to pay the railroad anything for responsibility of the car, my car would go through according to ordinary rates. If I paid the extra sum every time there was a breakage, I got the amount of the damage. It was up to the railroad.

Mr. W. P. Blair: I don't want Mr. Joannis to try to get at his paralleling conditions in this country.

Mr. Joannis: I am not paralleling. I am advocating them.

Mr. W. P. Blair: I do not think they will succeed. In the first place, in this country a railroad cannot waive a right of action against it for damage. Whatever the law in England may be, that has been decided by the Supreme Court of the United States.

Mr. Joannis: That alters every now and then.

Mr. W. P. Blair: It is not likely to alter here. In other words, the railroad is a common carrier and if you lose by the railroad's negligence in this country, you can collect damages. That is the way we want it to remain for all time. On the other hand, you must be fair to the railroad. If, on the other hand, you hold the railroad responsible for damage to your goods according to the value, you must allow the railroad to say, "If you hold us responsible for the damage that we do certain ware and that ware has a great value, we must collect more money for the freight. That is the simple proposition. And, to be fair, on the other hand, we will haul your cheap goods at a great deal lower price because if something happens through the carelessness of our employees, or something unforeseen, for which we are not responsible so far as ourselves are concerned, but we are responsible to the shipper to keep his goods intact to the point of delivery, if we do not have so much damage to pay there, we are willing to haul them cheaper." Those are principles that have long been established in this country. If I go to the factory I know that the Mennence people are perfectly willing to pay a higher rate of freight on their \$60 a thousand brick, but they want a cheap rate on their \$5 and \$6 cheap brick. I believe that is right. I believe that after it is all threshed out in this country, that is what will come.

Mr. Purington: I want to agree with Mr. Joannis absolutely, that that is the way of having the rates adjusted, if possible. Because it is just exactly as it is now. They charge a higher rate on glassware because of the risk that they run. Now, if that man who shipped that glassware is willing to take his chances with the common brick manufacturer, let him do so. That is the correct plan.

Mr. Joannis: I want to add one word, Mr. Purington, on Mr. Blair's statement. In the way he was replying, it would almost leave the impression that he misunderstood me.

You wanted to imply that I wanted to release the company for responsibility for damage and breakage on ware. I say that the basis of valuation must be on weight and bulk. If you take the common brick as the unit and that the average price of brick throughout the United States for the year 1908 shall be \$7 per thousand, then the railroad companies will ship clay products according to their weight and bulk upon that proposition, accepting the risk of \$7 per thousand. That is, at that established rate. Now, if the individual shipper places a particular value upon a piece or upon a shipment which it does not have to the railroad, if he places a value he shall say to the railroad, "here is my invoice for so much; I want that insured," and the railroad shall do the same as they are doing in other countries satisfactorily. They have a special tariff which does not differ in the slightest degree

from the tariff that they impose arbitrarily and spasmodically throughout the country. The shipper then shall pay the price for the specific value of those goods; the railroad shall accept that specific responsibility and carry that to its destination, and if it does not, it shall pay the price. It is an arrangement between the shipper and the railroad.

Mr. W. P. Blair: Then there is no difference between what I have said and what Mr. Joannis has said. That after all it comes to the proposition that rates must be made upon bulk, weight and value. You say that railroads have an established tariff for those higher risks.

Mr. Joannis: No, that they shall have. Not that they have. The question of value does not enter into it save as the basic value. You have a unit, a determined unit of weight and bulk, and there is going to be a basic value or price for that unit and therefore a basic risk of responsibility, whether those articles fluctuate \$5 or \$10 or \$15 in the market. Suppose I ship a load of pottery and want to send along a valuable piece of Teco ware. The railroad has nothing to do with the insertion of that small piece inside of the jug. You pack your jug full of straw and place your piece in there. Now if I want, as the shipper of that piece, to insure that against breakage, I say, "that crate is worth so much." You will have to say to Mr. Gates, what is the respective value of those articles?

Mr. Deeds: I think that the difference is that Mr. Gates can ship his pottery, under Mr. Joannis' idea, for just the same as you can ship your brick, provided the bulk and weight are the same, if he wants to. But if he does not want to, he can pay an extra freight rate and get protection from the railroad.

Mr. W. P. Blair: I understand that. So that we have got practically upon the same basis and the same idea except by a different method. But in that method, it goes back to what I have said. If he places a valuation of \$1,000 upon his shipment, upon which his rate is fixed, he cannot go to the railroad and collect \$1,000 but he has got to do just the same as he has got to do today. He has got to prove what that is worth. And that is the law of this country and has been since we have been a country. Now, then, if there is a law otherwise in England, it is a statutory provision that in some way has been held good under their constitution and they don't have to prove it, but they take the face of the paper. I know it has been advocated in this country, and it is all well and good if we can bring it about, but that means the life time of every one of us, if we can correct these particulars. It has been tried in this country all over. Take the matter of insurance; that when you insure your house for \$1,000, and your house burns down, the insurance company must pay that \$1,000. You know that has been attempted all over the country. It has been attempted along the lines, in some states, just exactly as Mr. Joannis has laid down. But it is no protection anywhere in this country because you have got to prove the value of that loss regardless of any contract that is made between man and man.

Mr. Deeds: That is what I was getting at, the distinction that a man can ship his pottery at the same price as his common brick, if he so chooses, as Mr. Joannis suggests; but if he wanted to be protected he would have to pay for it.

Mr. Purington suggested that the discussion be made more general and that others than those who had spoken should express their ideas, but the president said that it was getting to the dinner hour; if the members wished to discuss the matter more fully it could be done at another time, but now a motion to adjourn was in order.

Whereupon a motion to adjourn to 2 o'clock was carried. Third session will appear in next issue.

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## BANQUET

At 7:30 P. M. sharp the music began and the doors to the beautiful banquet hall of the National Hotel were thrown open to the visiting clay manufacturers and their guests. The plates were laid for over 100. The tables being profusely ornamented with ferns also an abundance of carnations and palms. A complete string orchestra furnished the music. The menu consisted of the following:

<i>Pure Mongole.</i>		
Celery	Radishes	Salted Almonds
	Steamed Halibut, Egg Sauce	Olives
	Potatoes Natural	
	Sweet Breads Croquettes, with Green Peas	
	Roast Tenderloin of Beef, Mushroom Sauce.	
	Mashed Potatoes	
	Lettuce and Tomato Salad	
Ice Cream		Assorted Cake
	Roquefort Cheese	Water Crackers
	Coffee	

At the speaker's table, where Toastmaster W. P. Blair presided, on his left were President Walter M. Pratt, E. F. Baldwin, Editor Peoria Star, Walter H. Kirk, attorney and counselor; Treasurer William Hammerschmidt, H. de Joannis, Editor of *Brick*, and ex-President John W. Stipes. To the right of the toastmaster were Secretary Geo. H. Hartwell, editor *CLAY RECORD*; Charles Burdick, executive officer Peoria Promotion Club; P. G. Rennick, internal revenue collector, F. Plumb, D. D. Deeds and James E. Randall, associate editor *Clay Worker*.

The speech of P. G. Rennick was particularly enjoyable and he was called upon four or five times, responding by recitations and dialect stories. The singing of "Illinois" by Mr. Burdick was so greatly enjoyed that he was compelled to respond to an encore several times. Mr. Plumb's "Reminiscences" were much enjoyed as well as the address of Mr. Baldwin and Mr. Kirk on "Clay Worker" and "Clay."

At just 10 o'clock everyone arose to their feet to "quaff a bumper" in unison with one that was being given to the health and long life of the Illinois Clay Manufacturers' association in the city of Washington, D. C., at the same moment by F. W. Fitzpatrick, executive officer of the International Society of State and Municipal Building Commissioners and Inspectors, and some friends assembled at his home, all more or less concerned with great public affairs and many exceedingly friendly to clay products.

## CLAY MANUFACTURERS IN ATTENDANCE.

G. M. Bowden, Abington, Ill.  
W. R. Guver, Abington, Ill.  
Matt Hoots, Alsey, Ill.  
L. Solfishburg, Auro, Ill.  
H. F. Townsend, Avon, Ill.  
A. Randall, Bartonville, Ill.  
L. H. Lambert, Beaverville, Ill.  
H. E. Search, Bloomington, Ill.  
John Hull, Cambridge, Ill.  
J. M. Mamer, Campus, Ill.  
N. L. Mamer, Campus, Ill.  
John M. Heckard, Canton, Ill.  
Geo. B. Roller, Canton, Ill.  
A. V. Bleininger, Champaign, Ill.  
John W. Stipes, Champaign, Ill.  
R. T. Stull, Champaign, Ill.  
Geo. J. Walter, Chatsworth, Ill.  
H. DeJoannis, Chicago, Ill.  
E. R. Frazier, Chicago, Ill.

E. M. George, Chicago, Ill.  
Geo. H. Hartwell, Chicago, Ill.  
L. E. Rodgers, Chicago, Ill.  
A. G. Hays, Drake, Ill.  
C. T. Hicks, Drake, Ill.  
D. C. Haeger, Dundee, Ill.  
C. L. Martin, Dwight, Ill.  
L. H. Martin, Dwight, Ill.  
Walter Pratt, Earlville, Ill.  
S. E. Milan, Elmwood, Ill.  
F. G. Matteson, Galesburg, Ill.  
W. S. Purington, Galesburg, Ill.  
J. M. Trainor, Gilberts, Ill.  
W. W. Wild, Gilman, Ill.  
J. B. Ford, Harrisburg, Ill.  
C. Steinmeyer, LaSalle, Ill.  
Wm. Hammerschmidt, Lombard, Ill.  
A. Pech, Macomb, Ill.  
D. H. Tierman, Macomb, Ill.  
J. H. Wilson, Macomb, Ill.  
F. D. Judy, Mackinaw, Ill.  
E. Hardy, Mokena, Ill.  
H. B. Fox, Monmouth, Ill.  
A. W. Gates, Monmouth, Ill.  
H. B. McMillan, Monmouth, Ill.  
E. R. Sturtevant, Monmouth, Ill.  
E. A. Swift, Ottawa, Ill.  
D. H. Jensen, Pekin, Ill.  
J. D. Jensen, Pekin, Ill.  
E. F. Lampitt, Pekin, Ill.  
Chas. Zoeller, Pekin, Ill.  
B. C. Carter, Peoria, Ill.  
F. R. Carter, Peoria, Ill.  
Jas. Dalton, Peoria, Ill.  
A. E. Giles, Peoria, Ill.  
F. J. Kanne, Peoria, Ill.  
Geo. C. Kanne, Peoria, Ill.  
Robt. Unzicker, Peru, Ill.  
Thos. Salvason, Petersburg, Ill.  
A. S. Curry, Reddick, Ill.  
Hans Paulsen, Rock Island, Ill.  
W. Paulsen, Rock Island, Ill.  
Fred Tittington, Rock Island, Ill.  
J. E. Ryan, Rushville, Ill.  
L. E. Snodgrass, Springfield, Ill.  
C. C. Barr, Streator, Ill.  
F. Plumb, Streator, Ill.  
Oliver Tillbury, Tonawanda, Ill.  
E. F. Lines, Urbana, Ill.  
G. C. Stoll, Wheaton, Ill.  
D. F. Stevens, Cayuga, Ind.  
J. W. Robb, Clinton, Ind.  
Albert Potts, Indianapolis, Ind.  
Jas. E. Randall, Indianapolis, Ind.  
J. W. Arbuckle, Rushville, Ind.  
Wm. P. Blair, Terre Haute, Ind.  
Ollie Wilson, Barnes City, Ia.  
C. G. Wheat, Emmettsburg, Ia.  
F. E. Martin, New Sharon, Ia.  
C. W. Stewardson, Strausburg, Ia.  
D. H. Downey, Dayton, Ohio.  
Chas. W. Raymond, Jr., Dayton, Ohio.  
J. I. Gledhill, Galion, Ohio.  
D. D. Deeds, Lorain, Ohio.  
D. H. Proper, Painesville, Ohio.  
H. J. Votaw, Plymouth, Ohio.  
Chas. Burridge, Tecumseh, Mich.  
Marion W. Blair, St. Louis, Mo.  
E. L. Hess, St. Louis, Mo.  
Frank McMillan, Lancaster, Pa.

# BY-PRODUCTS IN THE SAND-LIME BRICK INDUSTRY\*

By CLARK MELLEN, COLORADO SPRINGS, COLO.

In the report of the Department of the Interior that has recently been circulated, it is stated that 90 per cent of the sand-lime brick output for the year 1906 (statistics being taken from those plants that responded with reports), were commons. I think those of us who have been in the business a year or more realize that under average market and manufacturing conditions we cannot profitably compete with common clay brick. It should, therefore, be the effort of all to restrict their manufacture to face brick until the demand is supplied. There can be no doubt that with the right proportions of the best raw materials, correctly prepared and pressed, we can produce a high-grade face brick. But there is a further step which is equally essential to our success—to be able to market our maximum capacity at remunerative prices. Assuming that the output of the average plant should be not less than 15,000 No. 1 face brick a day, with capable superintendence we can reckon on a monthly output of, say, 350,000 face brick. I rather imagine there are few of us so fortunately situated as to be able to sell 350,000 uncolored face brick per month the year round, and so we are confronted with the problem of how to keep our plants profitably operating when we have reached the digestive powers of our markets for face brick. This brings me to my hobby—the manufacture of by-products.

I have great faith that in a very few years we will learn how to successfully manufacture artificial stone, such as water tables, door and window caps, window sills, coping, cornices, etc., as well as discover how to successfully enamel and make a speckled brick. Drain tile, flue linings, etc., can doubtless also be made. But the most important of the by-products for us to perfect is the artificial stone. I will confine my few remarks chiefly to this branch of the by-product.

There are a great many manufacturers of machines and appliances for making artificial stone and, of course, a many times greater number using these machines in turning out such stones of cement and sand. Aside from the color and perhaps one or two other drawbacks this cement stone should find favor everywhere, and there is practically no limit to the variety of designs and shapes, in competition with natural stone and terra cotta. We who have experimented to any extent know that we can produce such stone at our plants cheaper than the cement man, where he pays \$1.75 or more for cement, and where we have to pay not over \$7 per ton for lime. But though our material is more attractive in color, and more uniform than cement stone, we have a serious problem to overcome in tender edges and corners. If we can overcome this drawback I have no hesitation in expressing my confidence in the complete commercial success of artificial stone manufactured with sand and lime. How are we to proceed to solve the problem?

It is my private opinion that the members of this association should take this question up with the interest it

certainly merits and authorize a committee specially appointed by the chair to confer immediately with some competent and reliable chemist to ascertain what the cost of investigations covering a period of, say, three to six months would amount to, if possible, on a basis of a nominal charge for his time if unsuccessful, and a liberal compensation if successful in overcoming the above mentioned difficulty. The committee's report with its recommendations can then be communicated to our members and leave each one to decide whether he will agree to contribute his proportion of such expense. It is no doubt true that there is a great deal of variation in materials at our plants, but I should think it would be quite possible to make the by-product a success at all, or most all, plants, if the chemist can tell us how it can be accomplished with one set of materials. In view of the fact that without any knowledge of chemistry and little scientific assistance, after several months' experimenting in a rather primitive manner, I have succeeded in greatly improving the edges of some artificial stone that we have made by applying simple insoluble wash. I am justified in feeling very sanguine that a clever chemist should be able to show us how we can obtain the desired result on a practical and commercially successful basis. If the treatment of the material acted only as a temporary protection of edges, etc., in handling and transit from the plant to the wall, we would have made considerable progress.

The enameling of our brick should not prove a difficult process. Many of us are near enough to some pottery works to make our own experiments, enabling us soon to learn how best, if at all, we can develop this highly profitable branch of the trade.

I trust I have succeeded in arousing you to the importance of giving this subject your most careful consideration to the end that you will all actively support the movement.

## REWARD OF \$100 IS OFFERED DISCOVERER OF PURE SILICA SAND

The Portland Oregon Development League will present \$100 to any citizen of Oregon, Washington, Idaho, Montana or California who will find silica sand to fill the requirements demanded by the Columbia steel works, of that city, who have made the following offer through the league:

"We will take 100 tons each month of silica sand, 98 per cent pure silica and free from iron oxides, delivered at Portland at not to exceed \$6 per ton, and we will pay \$100 in cash to the discoverer."

Silica sand is now being shipped to Portland and other iron and steel manufacturing centers of the Pacific coast from Minnesota. It has been frequently reported that large quantities of pure silica have been discovered, and the community that "makes good" in this instance has a greater source of revenue than gold or copper mines, lumber mills or factories of any kind, for when a dependable quality of silica sand is found in quantities sufficient to supply the demand, all the iron works from the Gulf of California to Alaska, and from the Rocky mountains west, will be customers.

\* Read at the Columbus meeting of the National Association of Manufacturers of Sand-Lime Products

## BRICK MAKING IN HUDSON RIVER DISTRICT

William K. Hammond, President Association Brick Manufacturers and Agents, New York City, in a prepared paper refers to brick making on the Hudson River in 1907, thus:

It is not an easy matter to tell the story of the brick trade of the Hudson River section for the year of 1907, as it has had such varieties of conditions presented that the most experienced have obtained new views on the possibilities of the business. The quantity of brick held by the manufacturers of their yards along the Hudson on the opening of navigation for this year, showed largely in excess of the usual, and as building plans filed in the greater city for the preceding six months had fallen below the number and value for the corresponding time of the year before—a demand for brick enough to take into use this enormous quantity, before the product of 1907 would be offered on the market, was not expected by the most hopeful, so a consequent condition of unrest, and even anxiety was evident, not only among an aggravated extent among the dealers in materials, who were already discounting the prevailing low prices when bidding for delivery of brick to new work then slowly offering for spring contracts. With but trifling exceptions manufacturers were willing to sell at about cost, but would not make prices as low for future delivery to dealers, as the dealers were willing to speculatively make to the builders, hence the strange spectacle of brick being offered for delivery at buildings for early spring work at lower prices than manufacturers could put them alongside the docks in the city.

On the opening of navigation all shipments were taken on arrival for immediate use, and manufacturers, believing the demand to be natural forwarded all boats as fast as loaded, when suddenly the demand fell to comparatively nothing, as is evident from the fact that during the last four days of March, 71 barge loads of brick were taken, during the next six days 111 were taken, while for the week ending April 13, but 57 were taken and a large number left unsold as surplus on a market weak to start with, and being constantly supplied thus became heavy as lead, and with prices falling so rapidly that manufacturers realized they were confronting disaster if the conditions should improve.

Then, history repeating itself was in effect once more, and some yards which had been started up from former abandonment, remained idle; other owners were so undecided that delays in starting alarmed their old hands, who found occupation in other industries, while yet other owners started their yards at a much later time than ever before, and with a diminished daily output, unwilling to forward their stock at the smashed prices, yet obliged to forward enough to keep their storage sheds free for the new stock, and accepting with bad grace prices below cost of production, still hoped for what to them seemed to be impossible of fulfillment, a demand which would take their stock at a fair price, when suddenly, demand increased, and so rapidly that during the early part of June cargoes could not be despatched rapidly enough to supply the demand, while prices advanced from \$5 as the low price of April, to \$8 for a few cargoes as high price for June.

During June, July and August the daily demand exceeded the corresponding time of 1906 by 16 per cent, while the demand from January 1 to September 1 was several millions in excess of 1906. As to prices, it is probable that no period has been so unsatisfactory alike to manufacturers and dealers as during this enormous demand, for whether by reason of uncertainty of the future among those who bought, and those who sold, or of other causes, which were broadly hinted at, but not traced, prices flopped down and up, and mostly down, uncertain from day to day, sometimes showing one dollar per thousand difference on some grades within a day or two. From September 1 the demand declined steadily, until at this writing the record is about fifty millions behind 1906, and several times that number behind the record of 1905, and prices now are not sufficient at the wholesale rate to recoup the cost of production.

The manufacturer has had a year of unrest of hard work, of production without adequate money return, and the close of the year shows the stock of brick now under storage sheds along the river, nearly as large as that of last year, and produced at greater cost, because labor refused to accept a lower wage or to increase its daily product, while all other necessities for the production of brick were higher in cost than for 1906. The liability to physical injury to the laborer employed in manufacturing brick is not so great as for labor engaged in many other occupations, yet demands are constantly made upon manufacturers to make good for injuries.

These charges and costs must be borne by the product when accounted for, and if the employers of labor are to be so steadily attacked by the lawmakers, and labor fail in faithful performance, while value of products declines, results will be ruin inevitably. Unequal and oppressive laws have never benefited a people, and it is surely reasonable for the employee to share a moderate risk with what he brings to the development of enterprises, instead of saddling the employers with liability for the acts of those who are indifferent to results and careless of conduct. To these depressing conditions is now to be added financial uncertainty and while as yet the brick manufacturers have been touched but lightly in a direct manner by the panic, yet when tight money and lack of money affects real estate by retarding its development, so that bricks are not largely and continuously used, brick in stock will be but brick in stock, and not in process of turning into cash, which is so desirable. Yet those who observe and are best informed believe that this money squeeze will result in great advantage to real estate, as showing it to be of a positive and continuing value, and will therefore benefit brick manufacturers very materially, by demanding in the near future, for development of plans of the men who are clear-eyed and far-seeing, much larger quantities of brick than have ever been used before, for the reason that as the prudent owner scans the plans of the best architects he finds that brick have come again to their own first place, as the best and cheapest building material for those who build for permanence and strength.

Supt. Frank McDonald of the Minneapolis (Minn.) workhouse, has begun work on the brick plant for that institution. More than 100 men will be given employment.

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"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it. Instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

## CONVENTIONS

The twenty-second annual convention of the National Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d to 8th 1908. Headquarters at the Southern Hotel.

The eighth annual convention of the Wisconsin Clay Workers' Association will be held at Milwaukee, February 12, 13 and 14th, 1908. Headquarters at the Hotel Blatz.

The tenth annual convention of the American Ceramic Society will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Southern Hotel.

Success is the result of beating the other fellow to it.

If a man has money to burn his friends will gladly furnish the matches.

Don't delay it any longer, subscribe today to the Clay Record. It costs only one dollar for twenty-four numbers.

Don't get in the habit of going around with your bristles up.

Some people refuse to sow seeds of kindness because they fear the result will be a crop of ingratitude.

Instead of doing things there are lots of men who just sit around and make a speciality of knowing how they should be done.

If business is dull don't sit around and worry over it. Get out and hustle. Advertise. Get your publicity department working. Use all the printer's ink that you can afford. It has made many a man rich. Try it.

The proceedings of the second session of the Illinois Clay Manufacturers Association meeting are printed in full in this issue of the Clay Record. The third and fourth sessions will appear in the February numbers. There were papers read at the meeting that you cannot afford to miss.

## POPULARITY OF BRICK PAVING

There is an interesting showing of the popularity of brick for paving in the January number of Municipal Engineering where the statement is made that up to the first of December the contracts for brick paving entered into during 1907 show the following very satisfactory amounts: Ohio, 1,290,000 square yards; Illinois, 765,610; Indiana, 606,301; Michigan, 426,991; Wisconsin, 210,188.

This makes a total of 3,299,095 square yards of brick paving contracted for in these five states in 11 months of 1907. It is estimated that the December reports will increase this nearly to 4,000,000 square yards. Many cities were slow in preparing their work for letting contracts and consequently there was a little difficulty in getting prompt deliveries of brick toward the end of the season, but this will not interfere with the letting of contracts for the new year.

It would be far better for municipalities if they would prepare their contracts for letting during the winter season, so that the contracts could be let at the beginning of the construction season. Materials are then easier to obtain and usually cost less, the work can be better done during the warm season and the hurry and consequent poorer construction on account of the desire to finish up late contracts in the fall will be obviated. Municipalities will get better results, contractors will have easier work, the manufacturers of material will be able to anticipate their deliveries so that there will be evident advantages to all concerned by early action of the municipal authorities regarding their improvements for the coming year.

## OBITUARY

Charles B. Wood, a traveling brick salesman of Philadelphia, Pa., died at Wilksbarre of heart trouble. He was a representative of the Richmond Clay Products Co., New York.

Henry Brook, a brick manufacturer of Spokane, Wash., died of heart failure on board the steamship Roanoke while en route to southern California for his health. He was 60 years of age.

Seth J. Shares, one of Hamden's much respected and beloved citizens, is dead. He was 67 years of age. He was a partner of his brother in the firm, Horace P. Shares & Co., New Haven, Ct.

John Dickson, aged 65 years, died of heart failure at his home, 123 Flavel street, Philadelphia, Pa. For many years he was manager of the Wadsworth Brick Company. He leaves a widow and four children.

Charles J. L. Harland, the son of Edward Harland, ex-president of the Illinois Brick Co., died at his home, 691 Sedgwick street, Chicago, of Bright's disease. He leaves a widow and seven children. He was 42 years of age.

## FIRE! FIRE! FIRE!

Fire partly destroyed the National Tile Co.'s plant at Old Bridge, N. J. Fully covered by insurance.

The drysheds of the Norristown (Pa.) Brick Co. on Forest avenue were destroyed by fire, causing a loss of \$1,000.

The brick yard at Amesbury, Mass., owned by Curtis Janelle on Rocky Hill Road, was damaged by fire. Partly covered by insurance.

The main building of the Standard Drain Pipe Company, St. John's, Quebec, was destroyed by fire, causing a large loss, which was partly covered by insurance.

At Sankey Bros.' brick works, South Twenty-first street, Pittsburg, Pa., fire started in a drying shed and caused damage to the extent of \$5,000 before it could be controlled.

## EXCELLENT SHOWING BY PURINGTON COMPANY FOR THE YEAR

At the annual meeting of the Purington Paving Brick company, Galesburg, Ills., at the offices of the company it was brought out in the secretary's report that 85,321,000 brick had been shipped from the plant during the past year. An idea of the volume of business done may be gained from the figures given for cars handled in and out of the yards. During the year there were 15,530 cars handled, including brick, coal and supplies. The showing is an improvement over last year and speaks well for the local plant.

The following board of directors was elected for the coming year: D. V. Purington, W. S. Purington, George C. Prussing, W. E. Phillips, C. E. B. Howell, C. H. Chamberlain and F. G. Matteson.

The board met and elected the following officers:

President—D. V. Purington.

Vice President and General Manager—W. S. Purington.

Secretary—W. H. Terwilliger.

Treasurer—C. H. Chamberlain.

## ACCIDENTS, DAMAGES AND LOSSES

Hans Vogler, an employee of the Luverne (Minn.) Brick and Tile Co. was badly scalded by steam while testing some of the steam pipes.

The plant of the Fitzgerald Brick Co., Cossackie, N. Y., was sold under foreclosure to the plaintiff, Jennie Walsh. Consideration \$16,000.

In a cave-in at the Evans & Howard Fire Brick Co.'s mine Albert Triner was seriously injured and several others slightly hurt. Several tons of dirt fell upon them.

An 11-year-old boy named Anderson has sued the Rome (Ga.) Brick Co. for \$4,000 damages for the loss of a hand which was taken off in one of the cog wheels of their machinery.

The circuit court jury at Bay City, Mich., returned a verdict of no cause for action by Nelson Cotey against the Michigan Pipe Co., who was asking \$20,000 of the company for the loss of a hand.

John B. Weaver was injured at Brazil, Ind., while riding past the plant of the Indiana Paving Brick Co. when 40 pounds of dynamite accidentally exploded in the storehouse. His horse was also struck and badly injured.

Tom Cummings was timely rescued from his perilous position, that of hanging above the hot drying floor at the plant of the Western Brick Co., Danville, Ill. He is now confined to his home suffering serious injuries.

Mrs. L. C. Thompson has filed suit against the Ferris (Texas) Press Brick Co. for \$25,000 damages for the loss of the life of her husband, J. W. Thompson, who was killed in an accident while in the employ of the company.

Judge Sherman of the Superior Court in Boston, Mass., directed the jury to make a finding for the defendant, William Trudeau, the East Bridgewater brick manufacturer, who was being sued for \$15,000 damages by John Perulski, an employee in the sand pit. The judge found there was no negligence, inasmuch as the man was acquainted with the conditions for three weeks, the whole time that he worked there.

## MASON CITY IS A COPYRIGHTED TRADE MARK

A local firm has the exclusive use of the words Mason City for all their clay products. The Mason City (Iowa) Brick & Tile company applied for a copyright on these two words on the 14th day of September, 1907, and the right was granted them on the 14th day of January. This is a rather exceptional grant from the department at Washington. According to an act passed in the year 1905 it is not permissible unless the words or term have been used ten years previous to the time of the passing of the act. The Mason City Brick and Tile company have been using the words Mason City since the year 1803. The company were required to prove that they had used the words ten years previous to the time of the passage of the act. This trademark covers all the products that the company manufactures at the present time. Any new products that may be put on the market can not be protected by it. It will be an infringement if any of the other clay manufacturing interests of the city use this for their products. The trade-mark is peculiar from the fact that the two letters "S" and "N" in the trade mark are upside down.

### ASKS RECEIVER FOR BRICK COMPANY

In the superior court on the application of George W. Beers, one of the preferred stockholders in the Fort Wayne Pressed Brick Company, Attorney H. E. Keegan asked for a receivership for the company. The capital stock in this company, which was organized some time ago by Alexander Johnson, was \$40,000. Of this stock \$30,000 was common and \$10,000 preferred. The preferred stock has always been held by Fort Wayne capitalists. About two years ago George T. Butler and Albert T. Butler, of Albion, Ind., bought the common stock from Mr. Johnson and others. The preferred stock still remained in the hands of the capitalists.

The Butlers have had exclusive management of the plant and they have been poor managers. About five or six months ago, even before the financial panic came on, the Butlers prepared to abandon the plant and the allegation in the application for a receiver is that they have abandoned the business, deserted the valuable plant and left the city. The plant has been a paying one and can be continued successfully in competent hands.

Judge Heaton acted favorably on the petition for a receiver and Dan Beers was made receiver and at once furnished a bond and took charge.

There is every indication that the preferred stockholders will effect a reorganization and assume control if the inventory of the receiver is anything like a satisfactory report.

The financial flurry had nothing whatever to do with the departure of the Butlers from the city and the abandonment of the plant.

### THE BUSINESS OUTLOOK

The restoration of confidence in the banks, and the free circulation once more of the country currency, have given a wholly different aspect to the economic conditions from that which was prevalent in November and December. The money stringency stopped the movement of wheat and corn and cotton from the farmers to the markets. It stopped the wheels of factories everywhere. It closed many mines, brought building operations to a standstill, and threw hundreds of thousands of men out of work. It crowded the steerages of east-bound steamers with scores of thousands of workmen who chose to return with their saving to their native land until the demand for labor should call them back here again. But the country is fundamentally prosperous, and in most sections there is evident a gradual resumption of activity and a great deal of confidence as respects the future. Quite apart from the transient currency panic, there has set in a wide-spread process of what is called liquidation. Loans have been called in and credits are undergoing readjustment upon a hard-times basis. There will be a good many business failures yet to come; and for a year, perhaps two years, there will in many lines of business be a comparatively dull showing. It will be a period for the practice of thrift and the homely economic virtues, in order that resources, both private and public, may be used for the best possible results. There will be a very sharp reduction in luxurious expenditure and a corresponding increase in the amount of new capital that can be devoted to business undertakings.

### LOUISIANA BRICKMAKERS' ASSOCIATION HOLDS ITS ANNUAL SESSION

The Louisiana Brickmakers' Association met Jan. 15th, in the St. Charles Hotel, New Orleans, La., in their annual convention, and about 100 members from various parts of the State attended the meeting. The organization is fraternal in character, and the annual gatherings are devoted more to social features than to business.

Thomas Downey read a paper on "The Cost of Manufacture," and Fritz Salmen spoke on "The Manufacture of Brick." President C. N. Adams spoke on "Our Organization" and J. A. Blaffer gave an interesting talk on "Reminiscences of an Old Member of the Brickmaking Fraternity."

At the afternoon session, R. A. Kent, of Fluker, La., was elected President, Thomas Downey, of Baton Rouge, First Vice President; J. R. Abels, of Ponchatoula, Second Vice President, and Frank Bethune, of New Orleans, Secretary and Treasurer.

The retiring officers are: C. N. Adams, of Alexandria, President; C. D. Gondran, of Belle Helene, First Vice President; R. A. Kent, of Fluker, Second Vice President; Ernest M. Loeb, of New Orleans, Chairman of the Executive Committee, and Frank Bethune of New Orleans, Secretary and Treasurer.

In the evening the members and a few invited guests were entertained at a banquet, during which President Kent and all the members made short addresses. The guests at the banquet were: Mrs. J. G. Miller, of Atlanta; Mrs. Frank Bethune, of New Orleans; Mr. and Mrs. J. A. Langsdale, of New Orleans; Mrs. R. A. Kent, of Fluker, and J. A. Langarde, of New Orleans.

### BARZIL INDUSTRIES RESUMING WITH FULL FORCES AND FULL TIME

Brazil, Ind.—The manufacturing plants of this city report a marked revival in trade in the last two weeks. Some of the plants that had discharged more than half of their men and have been working one-half and two-thirds time, report that they have obtained sufficient contracts to enable them to resume operations with a full force and full time. The Brazil Fence Company, which recently completed a new factory here, and has a force of men working night and day getting ready to begin operations, reports plenty of orders already booked to keep the plant in operation for some time.

The Clay Products Company a few days ago landed an order for three hundred miles of conduits to be used by the Chicago City Railway Company. This order will operate the factory to its fullest capacity for four months, while President Titsworth reports enough orders already booked to keep the plant in full operation for one year. The Hydraulic-Press Brick Company, through its manager, H. A. Walters, has just obtained large contracts that will result in the plant resuming full operations tomorrow. One order was for 500,000 fine face brick for a large office building at Seattle, Wash. The Brazil Clay Company is working full force on State contracts, and every plant in the city reports many new orders in the last week.

## COMPANY ORGANIZED TO DEVELOP TEXAS CLAYS

The Ceramic Supply Company has been organized in Wheeling, W. Va. The company is composed of pottersmen who propose to develop a new pottery clay that may revolutionize the entire pottery trade. The companies represented at the meeting were the Knowles, Taylor & Knowles Company, of East Liverpool; Dresden Pottery Company, of East Liverpool; Thomas Mattock Company, of Trenton, N. J.; Cook Pottery Company, of Trenton, N. J.; Pope-Gosser Company, of Coshocton, O.; Mercer Pottery Company, of Fremont, N. J.

The principal purpose of the Ceramic Supply Company is to deal in pottery supplies, but primarily is to develop the holdings of the United Kaolin Properties Company. The Ceramic Supply Company have entered into a contract with the United Kaolin Company whereby they are for a term of eighteen years to have the entire products of their Lone Star Kaolin deposits in Texas. These kaolin deposits are about eight miles from San Antonio, and are pronounced to be the finest in the world for fine china making.

Dr. Zimmer, who is a pottery authority, and who has been building a new furnace for the Haviland plants in France, pronounces the new clay as superior to many and equal to the finest grades of limoges used by the Havilands. The products of kaolin requires but two-thirds of the heat used on the French limoges and produces a much more elastic china, with not such a great percentage of breakage and is much more translucent than the French china and is finer in color and polish.

Mr. C. W. Franzheim, who is an active mover in the development of the kaolin, said that if all the expectations for the products of the Lone Star state were realized that it would revolutionize the pottery business in America, if not in the world. It would mean that china in many respects finer than the finest Haviland, could be produced at prices lower than Haviland ware could be made and sold in this country.

It has always been a problem to find a clay equal to limoges clay and the potters now believe they have such in the Lone Star state deposits and if the qualities are as expected pottery may be produced in this country that will be among the finest manufactured in the world. Samples of the kaolin ware have attracted great attention and the potters are enthusiastic, while it will be of inestimable benefit to the potteries interested in the development and especial to those in Wheeling.

## GENESEO HAS THIRTY HORSE POWER MACHINE

Perhaps the largest traction engine in the state of Illinois is now being used to haul tile from the Genesee brick and tile yards to the Allerton farm, northeast of that city. The engine is a monster, being thirty horse-power. The drive wheels are about three and one-half feet wide, and once under way the thing walks right along with a coal wagon, large truck and three other side-board wagons all loaded with tile. The engine was bought for plowing on the Allerton land and will pull ten plows, and it is expected to facilitate the plowing on this ranch. At present they are now hauling about 10,000 tile at a time, making only one trip a day.

## COPELAND-INGLIS PLANT COMPLETED

\* Among the many industrial plants which have been in course of construction in the South for some months is the plant of the Copeland-Ingليس Shale Brick Co. of Birmingham, Ala. This company organized with \$100,000 capital stock, and after buying 400 acres of fine shale lands contracted for a large plant, the first production of which is now being marketed. The plant includes fireproof buildings and driers; coal-bin trestles dumping coal directly from cars in front of boilers and engines; using waste heat from boiler stacks for drying; also using waste heat from cooling kilns for water smoking, and other facilities. This plant is located at Alton, 11 miles from Birmingham, on the Seaboard Air Line Railway. It was engineered and built for the owner by the Luce Engineering Co. of St. Louis, Mo. The shale building and paving brick offered is said to be of the highest grade. J. R. Copeland is president, with offices in First National Bank, Birmingham.

## NEW VAN BRIGGLE POTTERY ABOUT FINISHED

The new Van Briggles pottery buildings will be completed about January 30. Located at Glen and Uintah streets, Colorado Springs, Colo., facing Monument park, the pottery is a striking piece of architecture, showing the artistic uses of gables and bringing out the many features of modern decoration, such as tiles and terra cotta, which will constitute one of the main products of the new works. The new pottery represents an outlay of \$50,000.

Modern clay working machinery is being installed, the equipment being complete in every respect. Four kilns are to be used, and six electric motors are now being put in. The walls of the manufacturing department are of white brick and the floors of cement. In the making of ceramics at this plant, Colorado clay only is to be used.

The interior of the display rooms and studios is of stained woodwork, and is very beautiful and artistic, there being two handsome mantel pieces, all in Van Briggles tile and relief effects. In the construction of the new buildings, the prevailing idea has been to show what effects can be produced both in interior and exterior decoration by the use of the Van Briggles products. The entire plant represents the highest type of interior and exterior building ornamentation.

## ENGLISHMAN LEFT HIS CLOTHES ON A BEACH AFTER TAKING OUT POLICIES

Los Angeles, Cal.—William Watson, an English pottery manufacturer, was arrested yesterday, charged with defrauding an English insurance company out of \$6,000, but he will not be extradited. It is said that the insurance company will be able to recover the amount of its loss from the proceeds of the estate of Watson's beneficiary, who died recently.

According to Watson's alleged confession, he left a suit of clothes on the beach at North Sunderland, England, in 1906. He went to Paris, then returned to London, and finally went to Quebec, eventually coming to the Pacific coast.

Domestic troubles led to his difficulties. After borrowing considerable money from Mrs. Helen Lampert, he had his life insured for \$5,000 in her favor and took out an additional policy of \$1,000 for his wife. He then left his clothing on the beach.



## DOINGS AT MASON CITY, IOWA

With the completion of the big new plant of the Mason City Drain Tile company and the beginning of the manufacture of tile which will come at once, Mason City will have seven great plants all working all the time in the manufacture of brick and tile and our city will rank as the greatest shipping point for drain tile in the world. The capacity of the new brick and tile plant will be 50,000 per day and this plant like all the rest will be run at limit capacity all the time.

The Mason City Drain Tile Co. plant will be completed and making tile in sixty days. The new plant is located to the south and slightly toward the west of the Mason City Brick & Tile Co. plant or just about directly south of the big plant of the Mason City Sewer Pipe Co. The work on the new plant has been going on night and day since early last fall. The demand for drain tile has been and still is so great that it is impossible to fill all orders. The product of the new plant for the next year is assured a market almost before the plant itself is completed.

New boilers are being placed in the plant of the Mason City Brick & Tile company and the power capacity of the machinery is being increased. At the Mason City Clay Works three new kilns and one new stack are practically completed. Everything is being done to enable the great tile and brick plants to produce more than ever before. One of our greatest industries is growing with wonderful leaps and bounds and yet healthfully, too, for all our great yards cannot produce enough to supply the demand for Mason City brick and tile.

## AMERICAN PIPE EARNINGS

The American Pipe Manufacturing Company, Pittsburg, Pa., reports \$615,683 net earnings, and \$420,000 dividends paid in 1907, as compared with \$618,042 net earnings and \$480,000 dividends paid in 1906. The company's position as of Dec. 31 compares as follows:

## ASSETS.

	Dec. 31, 1907.	Dec. 24, 1906.
Bonds, book value.....	\$4,584,467	\$4,141,834
Stocks, book value.....	361,876	383,837
Unfinished contracts.....	88,640	263,955
Real estate (clear of incumbrance).....	66,860	66,590
Books accounts due company.....	783,104	763,513
Bills receivable.....	1,878,047	1,266,053
Merchandise on hand.....	63,978	63,115
Cash on hand.....	243,730	525,743
<b>Total.....</b>	<b>\$8,072,706</b>	<b>\$7,477,343</b>
<b>LIABILITIES.</b>		
Capital stock.....	\$5,000,000	\$5,000,000
Undivided profits.....	1,879,796	1,663,813
Dividends.....	100,000	120,500
Bills payable.....	880,000	650,000
Book accounts owing.....	212,900	43,530
<b>Total.....</b>	<b>\$8,072,706</b>	<b>\$7,477,343</b>

The company owns the following, which are not included in above statement of assets: Forty-nine thousand eight hundred and eighty-two shares of the capital stock of water and other companies, par value, \$3,793,100; sundry bills receivable, not immediately collectable, amounting to \$25,533; patent rights, factory buildings, machinery and similar assets.

## AMERICAN BUILDING MATERIALS IN BRAZIL

In the line of building materials the United States has had little trade outside of the rougher articles. It has sent several million dollars worth of pitch pine annually for a good many years, and has dominated the market in turpentine. In prepared paints its trade has grown but little, even in spite of the preferential tariff favoring American paints. The market is a good one, and could easily be reached by American paint men. The matter of climate also should be considered in the paint trade, heat and moisture and not frost being the elements that are important.

Some American pressed brick have been sold for modern building in Rio de Janeiro, and the trade could be greatly increased, American building tiles are being introduced, but the preference so far is for the European article chiefly because of freight considerations and because European manufacturers have agents on the ground. Nearly all the buildings in Brazilian cities are of stone and brick, solid, with practically no high buildings. It is probable, however, that the construction of two comparatively high buildings in Rio de Janeiro, now in course of erection, will lead to other buildings of this sort.

## PAVING BRICK MANUFACTURERS ENTER COMPLAINT AGAINST SEVERAL ROADS ALLEGING UNFAIR RATES

A bill of complaint was filed with the Inter-State Commerce Commission the 18th of January by a number of paving brick manufacturers against nearly every railroad operating in the Central Freight Association territory, which on account of the number of railroads involved is one of the most important cases to come before the commission.

John F. Lent, traffic manager of the National Paving Brick Manufacturers' Association, in discussing the matter said:

"The basis of this complaint is the east-bound rate of 22½ cents per hundred pounds on paving brick from Chicago to New York, the former rate being 20 cents. This rate became effective January 2 and is the basing rate for all points in the Central Freight Association territory."

Among the defendants are the Baltimore & Ohio, Bessemer & Lake Erie, Pennsylvania Company, Pennsylvania Railroad Company, Pittsburg & Lake Erie, Wabash-Pittsburg Terminal and 44 other railroads.

The complainants are: The Metropolitan Paving Brick Company, Canton, Ohio; Mack Manufacturing Company with plants at New Cumberland, W. Va., Philadelphia; Malvern Clay Company, Malvern, Ohio; Big Four Clay Company, Malvern, Ohio; T. B. Townsend Brick and Contracting Company, Zanesville, and the C. P. Mayer Brick Company, Pittsburg, Pa. All these concerns have Pittsburg representatives and a great amount of their business is handled through these representatives.

The Central Freight Association territory includes all points east of the Mississippi and north of the Ohio rivers and west of Pittsburg and Buffalo.

J. D. Fav, of Columbia, Mo., is at once to perfect plans and establish a brick works at Brownwood, Texas.

**SAND OR LIME BRICK OR BLOCK NEWS**

W. C. Newman, Atlee, Va., wants information regarding the manufacture of sand-cement brick and its cost as compared to clay brick.

William Morrison, Rossville, Ga., wants to correspond with manufacturers of sand-cement brick machinery with a view of putting in a plant.

The Supply Cement, Stone and Brick Co., Supply, Okla., has been incorporated with \$5,000 capital stock. Incorporators are B. F. Witttrick, C. B. Irons, R. E. Innes and C. C. Devore.

The Lake Superior Sand-Stone Brick Co., Calumet, Mich., had a very prosperous year in 1907. They have placed on the market an enameled sand-stone brick which is attracting much attention.

The Seattle (Wash.) Sand Stone Brick Co. is putting in machinery at its plant on Whidly Island, to make 40,000 sand lime brick daily. The plant will be ready for business by the first of April.

Lee R. Gordon has been appointed receiver of the Lawrence Sand-Lime Brick company at New Castle, Pa., application was made by R. L. Davis, a stockholder, who has a \$4,500 claim against the company.

The Pacific Sand Stone Brick Co., American National Bank building, Los Angeles, Cal., are furnishing the Carnegie library at Pasadena with their sand lime brick. F. B. Cole is the manager of the company.

The Illinois Granite Brick Co. has purchased 40 acres of sand in Michigan City, Ind., and will build a sand lime brick plant. Paul Fuchs is president, O. M. Steffens, treasurer, and Leo H. Pleins, secretary. All are Chicago men.

The Holland Sandstone Brick Co., Antioch, Cal., have for some months been shipping over 1,000,000 brick monthly. They use the Komnick system. O. M. Tupper is the manager, and they maintain an office in San Francisco at 268 Market street.

The annual meeting of the Watertown (S. Dak.) Pressed Brick company was recently held and re-elected the old officers. Notwithstanding the fire which destroyed the plant 30 days after it was completed, it was a very successful year. It was also decided to remodel the interior of the factory, as it will be taxed to full capacity to fill its orders.

The sand lime brick department of the Intermountain Building Material Co., Ltd., a Boise, Idaho, will hereafter be known as the Granite Brick Co., Ltd., and its capital stock is increased from \$35,000 to \$75,000 for the purpose of enlarging the output which has found a ready sale. In the near future they will put in an additional press and other equipment.

The Auburn (Ia.) brick and tile works is making rapid progress in erecting their new plant.

A party from Kentucky, owning a brick and tile outfit is negotiating with the business men of Esterwood, La., to put up a brick and tile works there.

Lee Worthington, of Hot Springs, Ark., and John Brown, of Chicago, contemplate the development of 400 acres of clay land eight miles from Hot Springs. A demonstration plant will be built at Hot Springs.

**FOR MEASURING FINENESS OF SOIL**

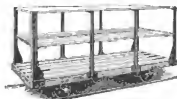
Prof. Jeffery has an apparatus for measuring the fineness of soils by a flow of air through them. Mr. Rosen, working under his direction, for Dr. Lane, the state geologist of Michigan, has obtained some results which are of scientific interest and very probably of practical value. In testing some moulding sands with the apparatus it is found that the quality of the sand can be determined quite closely by noting how much air can be conducted through a column of the sand in a given time, together with the pore spaces. The quality of the sand is proportional to the amount of pore space between the sand grains and inversely proportional to the time required to drive a certain quantity of air through it, other things being equal.

**WILL DEVELOP KAOLIN BEDS**

San Antonio, Tex.—A company with a capital stock of 350,000 has been formed to develop the extensive kaolin deposits of Edwards county. W. E. Bradwell of Chicago, the president of the company, has arrived in San Antonio and says that work is to begin shortly. He has with him a number of directors of the company. They will go from here to Uvalde and from there overland to kaolin deposits. Among the directors of the company are A. C. Bird, vice president of the Gould lines; George C. Pryon, John Duryee, L. B. Steward, Henry L. Prescott, W. N. Sturgis, J. D. McMurray, John J. Brown and one or two others. The company has leases on 100,000 acres of land in Edwards county and the deposits of kaolin are said to be the best in the world.

## **The Lightest Running** **Dryer Car Made**

**having a dust proof roller bearing box made of steel. No oil needed. Write for description and prices**



**Vulcan Iron Works**

**MASON CITY,  
IOWA**

## MISCELLANEOUS ITEMS

The Roseville Brick and Terra Cotta Company, Roseville, O., has transferred its plant to the Devonshire Brick and Ceramic Company.

The Salmen Brick and Lumber Company, Slidell, La., posted notices that their works will run eleven hours instead of ten, as last year.

The Kankakee (Ill.) Brick and Tile Company have erected temporary sheds over the clay pit at St. Anne and propose to work the plant all winter.

The Arkansas Brick and Manufacturing Company, Little Rock, Ark., are now making tests of shales near there with a view of establishing a larger plant.

The Schmitt Brick Company, Columbus, O., has been incorporated with \$48,000 capital stock by Philip, E. B. and Lawrence Schmitt, W. M. Parsons and J. H. Holterman.

Mr. McNeil, a representative of the Red Wing (Minn.) Sewer Pipe Company, has closed a deal for 65 acres of clay land near Kalo, Ia. A large plant will be put up in the near future.

The Curtice Tile and Brick Company, Curtice, O., has been incorporated with \$10,000 capital stock and the company will take over the plant held by Herman Bunte and will rebuild and make extensive improvements.

The West Virginia Brick, Tile and Terra Cotta Company, Guthrie and Falling, Waters, W. Va., has been incorporated with \$50,000 capital stock. Incorporators are Charles Thyme and John Griffin, of Philadelphia, and E. L. McKeown, of Guthrie, W. Va.

E. M. Renfroe contemplates the building of a brick plant at Madisonville, La., and wants prices on machinery.

The Van Briggles Pottery building at Colorado Springs, Col., will soon be completed. Modern clay working machinery is being installed.

E. R. Dickinson, of Cherryvale, Kan., is considering the forming of a stock company to build a 100,000 brick daily capacity plant at Hutchinson, Kan.

The Salina (Kan.) Vitrefied Brick Company has abandoned the use of oil as a fuel. Coal is now being used and it is claimed by them to be cheaper.

The Gadsden (Ala.) Brick Company, which suffered a loss by fire some time ago, will purchase new machinery and repairs for the plant. W. T. Christopher is the owner.

The large brick works of the Eastern Hydraulic Press Brick Company, Winslow, N. J., has been closed down for an indefinite period, throwing 100 men out of employment.

The Texas Kaolin Company, of Portland, Me., capitalized at \$350,000, has been incorporated to do business in Texas. The Texas agent will reside at San Antonio and the works will be at Leakey, Texas.

The Lake View Brick Company, Lorain, Ohio, has re-elected its officers, J. S. Tait being president and manager. The company is planning extensive improvements which will increase the capacity of the plant.

Edward Freese, of the Janesville (Wis.) Red Brick Company, has accepted a position as superintendent of the Edwards Brick Company, at Columbia, Mo. His father and brother will operate the plants at Janesville and Monroe, Wis.

## AN EXCELLENT OPPORTUNITY

As I am not a practical brickmaker and bought this plant to protect myself, I will offer same for sale to responsible parties.

### The Material

The material is a red plastic surface clay from 10 to 25 feet thick, free from stones and burns a cherry red in five days. Twenty acres or more goes with the plant, 250 acres more can be had if necessary.

### The Markets

The market is the cities lying adjacent to Hampton Roads, Va., the Natural Gateway to the markets of the world for the products of the middle west and south. These cities have made wonderful progress in the last ten years and with the completion of the Railway, nearly finished, will go forward by leaps and bounds. The completion of the canal from Norfolk through N. C., so that the coast way shipping can avoid the dangers of Cape Hatteras and which is now under way by the United States government, will be a great stimulus to the growth of these cities. The entire section of the country is rather sandy, for this reason brick clays will always be scarce and valuable. Brick has been ready sellers at seven dollars for some years and the outlook is for higher prices.

### The Equipment

The equipment consists of a 100 horse power Boiler, 50 horse power Engine. Disintegrator, Pug Mill, Brick Machine, a Martin patent rack and pipe steam dryer, tools of every description, brand new, not used 20 days, and on same yard, side by side is also

### Stiff Mud Outfit

A 40 horse power Boiler, 35 horse power Engine, a J. D. Fate Company combined "Hummer" Machine with a Binsing Automatic End Cutting Table; Scott's patent brick cars, with rack and pallets for open air drying in sheds. A complete stiff mud outfit in excellent condition.

### Houses for Help and Manager

There are new and commodious houses for the manager and different classes of laborers.

### Cost of Plant and Terms

There is not a more complete yard or one more up-to-date in the state for its size. The machinery has cost nearly \$10,000, but will sell very reasonable and on easy terms. The mildness of the climate enables one to run with the steam dryer the year around.

ADDRESS

W. T. JONES, Williamsburg, Va., LOCK BOX 3

## CLAY RECORD.

37

R. L. Ingram will establish a plant at Carrollton, Texas, for the manufacture of building and paving brick.

Clyde Crawford and P. Warner have purchased the tile factory owned by Jesse I. Brinker at Alvada, Ohio, and will operate same.

The Brockton (Ill.) Tile Company has closed down its plant for repairs. A new power house and new boilers are being installed.

Stonger & Biehl, Pana, Ill., have purchased a stiff mud outfit and will install same in their yard, expecting to make brick so they can fill their orders.

Pray and Smith, Greenfield, Mass., have sold their Elm street brick yard to Daniel Strickland, of North Haven, Ct., who will operate same in the spring.

The Ringle (Wis.) Brick Company has completed part of an improvement to its plant that will increase its output to 5,000,000 annually. A dryer will be put in in the spring.

The plant known as the Schuylkill Valley Clay Manufacturing Company, located at Shoemakersville, Pa., has been bought by A. A. Gery, of Reading, Pa., and will be operated at once and will be known as the Glengery Brick and Clay Company.

The Pacific Coast Pottery and Terra Cotta Company, San Jose, Cal., is building a larger and more commodious plant between Fourth and Fifth streets, and will have the buildings finished by March. The new machinery has been ordered. The officers are: President, A. W. Hastings; vice president, L. S. Denton; secretary, W. K. Jenkins, and treasurer, R. R. Webb.

Coles Automatic Brick Manufacturing Co., Montreal, Quebec, has been incorporated with \$100,000 capital stock.

Brush Brothers, Buffalo, N. Y., has been incorporated with \$100,000 capital stock. The directors are William H. Brush, Warren H. Brush and William C. Brush, of Buffalo.

Emmett and Albert Hanna and Charles Watson, of Rawson, Ohio, are looking for a location for a tile works at that place. Mr. Watson is at present proprietor of an elevator there.

The Mount Carmel (Ill.) Vitrified Brick and Sewer Tile Company has been incorporated with \$50,000 capital stock. Incorporators are J. A. Stansfield, J. G. Stansfield and J. E. Willis.

S. L. Alexander of Stanley, Wis., has been engaged as superintendent of the plant of the Fond du Lac (Wis.) Pressed Brick Company. The plant will be enlarged and kilns built.

R. B. Jordan, local agent for the Burlington road at Utica, Mo., is making an effort to establish a large brick and tile plant there using the shale. Meek Brothers own the shale deposits.

Big improvements are being made to the East End brick works, East Liverpool, O., owned by Gamble & Surles. New kilns and machinery are being added and the entire plant thoroughly overhauled.

The Brick Manufacturing and Supply Co., Ltd., London, Ontario, at its annual meeting decided to add a pressed brick outfit to its plant. They declared an 8 per cent dividend, and elected Wm. Tyler, president; George Everett, vice president, and Ed. Martyn, secretary and treasurer.

### For Sale: Engines and Boilers

#### ENGINES:

**Curtis and Automatic:**—20 x 42 Allis, 18 x 42 Hamilton, 18 x 30 Wright, 16 x 32 Buckeye, 14 x 24 Atlas, also 12 x 30, 10 x 30, 13 x 16, 13½ x 15, 12 x 18, 12 x 14, 12½ x 12, 10 x 10 etc.

**Throttling:**—18 x 20 H. S. & G., 18 x 24 Erie City, 16 x 20 Chandler & Taylor, 14 x 24 Atlas, 14 x 14, Vertical, 12 x 18, 11 x 16, 10 x 16, 10 x 12, 10 x 10 Vertical, 9 x 12, 8 x 16, 8 x 12, etc.

#### BOILERS:

**Horizontal Tubular:**—84 x 18, 76 x 16, 72 x 18, 72 x 16, 62 x 16, 60 x 16, 60 x 14, 64 x 16, 64 x 15, 48 x 14, etc.

**Fire Box:** 60, 50, 40, 35, 30, 25, 20, 16, 14, 12, and 10 horse power, etc.

**Vertical:**—55, 35, 30, 20, and 15 horse power, etc.

**Pumps, Heaters, Tanks, Saw Mills, and General Machinery**

THE RANDEL MACHINERY CO., 1732 Powers St., Cincinnati, Ohio

### THE ANTON VOGT DOWN DRAFT KILN

For Sewer Pipe, Drain Tile, all kinds of Brick and hollow Building Material. Cheap and simple. Don't fail to investigate this Kiln, it delivers the goods. To purchasers of Plans and explicit instructions of how to build, set and burn Kiln my bureau of valuable practical information is **FREE**

ANTON VOGT, Ada, Okla., U. S. A.

### DIRECT HEAT

# DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**

62-64 William St.

NEW YORK CITY

## CLAY RECORD.

## WANTED

Superintendent brick manufacturing plant; estimator fire-proofing, salesman, brick and sewer pipe, mason, terra cotta, bookkeeper, manufacturer, private secretary positions in for 12 offices, N. W. HATFIELD, 200 Broadway, New York, or 1010 Hartford Bldg. Chicago.

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled factories are offered complete or in part, cheap. Have several Engines, Rollers, Crushers, Drying Pipes, etc. if you wish to buy or sell write

Brick and Tile Machinery Secor. Ill.

## FOR SALE

One power Repra. in number one condition, used only but a short time, capacity 1000 per day. Ask for full particulars.

American Enamelled Brick & Tile Co.

1 Madison Ave. New York

## NOTICE

To American Clay Machinery Manufacturers - A sound proposition for N. W. Alberta, Can. Articles of Association have been signed for Illinois - Brick & Tile Co. Ltd. for \$250,000 of 250 shares at \$100 each at par. To equip a complete brick making plant on field of 40 acres parcel at 40 feet and analysed by the Henry Martin Brick Machine Mfg. Co., of Pa. U. S. A., whose tests are satisfactory for a good sound brick.

The situation of the field is close to the Railway siding of Claymont, on the C. & N. E. miles from Vermilion City. The Railway of the famous Saskatchewan Valley has the finest brick, where brick are now selling at \$20 per thousand and in great demand at all.

We desire to correspond at once with any firm who will put a fully equipped up-to-date plant on the field on an acceptance backed by fully paid up stock, who may recommend a capable manager, to engage himself with our company at salary agree upon.

ALEXANDER HAYSON

Plumber Builder and Contractor

Vermilion, Alta.

Solicitor

K. V. Fieldhouse, Esq. - R. T. B.

Vermilion, Alberta

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 22 combined brick machine with repair parts sufficient to make machine first class. Capacity 1500 to 2000 per hour. Greatest bargain. Write for particulars.

GREAT EASTERN CLAY CO.

80 Cortland St., New York

## FOR SALE

Three two-press Whitaker pressed machines. Each machine is complete with counter shaft and ready to run. Condition good.

One single press Whitaker machine, all complete and ready to run. These machines are for making pressed brick. Condition good. Special price.

6.50 half price. Sells each 30 inches long, 9 inches wide and 1 inch thick. Your pick of these pallets for six cents apiece.

C. B. Carr.

We also have several engines and boilers, heaters, pumps and connections.

THE COLUMBIAN EQUIPMENT CO.

304-306 Brunson Bldg. Columbus, Ohio.

## POSITION WANTED

I have had twenty-two years' experience in the fire clay, brick, hollow brick, building tile, gas retorts and stoves. Understand making machinery and stoves brick want position as superintendent.

W. T. J. care Clay Record, Chicago, Ill.

FOR SALE - CHEAP - New and re-laying rails in 18, 20 and 22 pound. For prices, address:

ATLAS CLAY & NPG CO.,

Cleveland, Ohio.

## FOR SALE AT GREAT LOSS

One 30-H.P. portable boiler and engine. One horizontal port mud brick machine and clay crusher, capacity 25,000 with 8 men and boy and one team, direct from clay bank, can be delivered with one-half brick pallets and dry sheds for 10,000 brick, 24 portable furnaces with grate bars, and all kinds of tools necessary to operate the plant. Unusually good for plant here. Product on hand now. Good reason for selling.

P. A. WOLFF,

Cedar Rapids, Iowa

## POSITION WANTED

Young man desires a position as Superintendent or sales manager, understanding stiff mud and dry press process. Has traveled extensively.

TRAVELER, care Clay Record,

Chicago, Ill.

## FOR SALE

One No 2 Potter & Co. clay disintegrator used only six months. Address

C. SOLFISBEK ROSS, Aurora, Illinois

## WANTED

12 offices covering entire brick and building material field. Positions open for office, sales and technical men. Write, stating age, experience and location desired.

HATFIELD,

30 Broadway, New York City, or

1010 Hartford Bldg., Chicago, Ill.

## BRICK YARD FOR SALE

Old established yard in good town of 5,000 people, with good country surrounding, 40 acres, good lands and sheds. Good reason for selling. Call on or address

CHARLES MCNEAL, Mayville, Mo.

## FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various grades, radius and weight rail, at special prices.

TIF ATLAS CAR & NPG CO.,

Cleveland, Ohio.

## FOR SALE CHEAP

Well improved tile and building block plant in good shape. Best of all market for entire out put. Well improved farms of 30 acres or less. Address

A. J. GUILLE,

R. F. D. No. 2, Des Moines, Ohio

## WANTED

A good, practical man who thoroughly understands the manufacture of brick and fire proofing, using a stiff mud machine and tunnel dryer. Raw material consists of a high-grade plastic fire clay. Plant located in southern Ohio. State experience, age and full particulars. Address

FIREPROOFING care Clay Record,

Chicago, Ill.

## WANTED

A thoroughly competent and reliable Superintendent to manage a stiff mud brick plant at Columbia, Mo. Capacity 25,000 a day, output principally pavers.

Must have All references, no other need apply. Address or reply in person

EDWARDS BRICK CO.,

Columbia, Mo.

## PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale and good market for all the brick. Address

DENIS, care Clay Record,

Chicago, Ill.

## FOR SALE

Second-hand presses of different sizes and makes. Good and low prices and low prices. THE FERNHOLTZ BRICK MACH. CO.,

Old Manchester Road,

St. Louis, Mo.

## BRICK AND TILE PLANT

## FOR SALE

At Carthage, Ill. Hercules port mud brick machine, 3 B. Madden & Co. machine for making tile and stiff mud brick, machinery, sheds and kilns in good repair. 35 H.P. engine and 20-H.P. boiler, new. Address

W. E. LYON & CO.,

Carthage, Ill.

## FOR SALE

One Hercules brick machine, Horton Mfg. Co. make, capacity 8,000 per day, also mould sanders for same. 50 good moulds, machine has only 1000 lbs. in good repair. Brick sheds, racks and pallets to hold 10,000 brick. Good trucks. Good reason for selling. Address

L. R. care Clay Record,

Chicago, Ill.



In better make, ref. low

\$5 and \$10, in

4 Wheel, \$1.00

4 Wheel, \$1.25

Superintendent wanted. R. A. HART, 414 White St., BATTLE CREEK, MICH.

## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. ST. PETERSBURG.

Care Clay Record, Chicago, Ill.

## FOR SALE

One-half the stock of successful incorporated dry-pressed red brick company, carrying with it position of secretary-treasurer of the company. Situated in Illinois city of 40,000. Entirely new, modern and growing in adjacent territory as well as in Chicago. Present holder is in poor health and has other business. \$75,000.00 will buy half the stock, cash or negotiable paper. Excellent chance for good man. Holder of other half of the stock is one of the best-known brick makers in Illinois. Address, U. S. care Clay Record, Chicago, Ill.

## FOR SALE

A 4-foot American Clay Machinery Co. Dry Pan in first-class condition. Will sell cheap to avoid moving.

SMITH BRICK COMPANY,

Omaha, Neb.

## BRICK YARD FOR SALE

Owing to death of owner, estate will dispose of only brick yards in railway town of 4,000. Central location. Water supply. Just outside of city. Good main road and adjoining Railroad yards. Will sell cheap.

Address G. E. B., care Clay Record,

Chicago, Ill.

## FOR SALE

Boiler 40 tubes, 12 inches, 15 feet long by 40 inches horizontal.

1 Steam Gear Troughing Machine complete.

1 Potter Disintegrator, 7 inch rolls.

1 American Clay Manufacturing Co. Brick Side Cutter 12 inches.

1 Carrell Single Die Steam Repra. 15 M daily.

1 J. C. Stearns & Sons Brick Machine, Automatic Side 60 M.

1 American Clay Mfg. Co's No. 10 Brick Machine.

1 Automatic Rotary 30 M Brick per End. Call 18 brick capacity 100 M brick per day.

1 Chambers Automatic End Cutting Machine, 30 M.

1 Chambers Automatic End Cutting Machine, 30 M.

1 Richardson Double Die Repra. made by Ohio Ceramic Co.

1 Martin Drag Belt Conveyor, 35 feet long, 18 inch belt.

6 Clay Bank Carts.

12 sets Certe Harrows.

12 Trucks.

1 30 horse power Side Valve Engine.

1 Rider Engine Hot Air Pump.

1 Vard Miller.

1 Dredge Pump 2 inch discharge.

Address NEW JERSEY

CARE OF CLAY RECORD

Chicago, Illinois

## FOR SALE

Piping, cars, track and foot pallets constructed in a brick dryer of seventy thousand capacity.

PERCIVAL GOLDIN,

Catskill, N. Y.

## SHALE CLAY FOR SALE

Have bed of red, chocolate and blue shales exposed full length of 3,500-foot railway cut and to height of 60 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shale suitable for hollow brick, paving block, sewer pipe. On river. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Urban Railway Co.,

Des Moines, Iowa.



Entered as Second-Class Matter January 23, 1876, at the Post Office at Chicago Ill., under Act of March 3, 1879

Vol. XXXII. No. 3. CHICAGO, FEBRUARY 14, 1908.

Semi-Monthly, \$1.00 per Year  
Single Copies, 16 Cents

## REPORT OF THE THIRTIETH ANNUAL MEETING OF THE ILLINOIS CLAY MANUFACTURERS' ASSOCIATION

### THIRD SESSION

The third session of the Illinois Clay Manufacturers' Association was called to order at 1:30 P. M. January 15th, in the assembly hall of the National Hotel, at Peoria. The attendance of this meeting was the largest in the history of the association with one exception.

The first paper taken up was "The Benefits of Collective Accident Insurance" by Fawcett Plunk, president of the Streator Paving Brick Company.

#### THE BENEFITS OF COLLECTIVE ACCIDENT INSURANCE

I suppose it may regarded as axiomatic that every business must carry insurance. It is a matter over which we have no control, no choice. We must carry insurance. The only question is whether we shall carry it ourselves or hire somebody to carry it. Where the risk is so concentrated that some unavoidable mishap may cost hundreds or thousands of dollars, which perhaps can be ill spared from the business, it seems the part of good sense to diffuse the risk; that is to hire some one to carry the insurance who will spread the loss over a great many insurers and so prevent it from falling with crushing effect on any one individual. Most business men have accepted this form of protection against loss by fire, but not so many, perhaps, have felt that these considerations apply with equal force to losses occasioned by accident.

The Streator Paving Brick Company, which I represent, has thought it advisable to relieve itself of the hazard of loss by accidents, and as a matter has attracted some attention in the trade papers I have been asked to speak of it here. There are two or more forms of protection against accidents, and the kind we first availed ourselves of was protection against legal liability to our employes in the event of accident. The protection in this case is more needed against the cupidity of the shyster lawyer than against the actual injury to the employee. In our business there is not much actual damage to life or limb that we are legally liable for. The larger number of accidents are due to the carelessness of employees, and for those the law does not hold us liable. But there is never wanting the shyster lawyer who is ready to take a personal injury case at a percentage, and, whether the case has merit or not, there is always a chance to mulct

a corporation before a sympathetic jury, and so we are subjected to the trouble, annoyance, and expense of a lawsuit, even if we appeal and finally win the case, the cost has been serious in money and worry. Insurance in such a case as this is doubly valuable, for it not only protects us against the verdict if it should go against us, but it actually operates to prevent the inauguration of unmerited lawsuits. If it is known that an insurance company will defend the suit, with its staff of expert attorneys, the shyster lawyer is not nearly so apt to take the case, and so the insurance policy operates as a preventive of trouble, as well as a remedy if the trouble is unavoidable.

We had been operating successfully under this sort of policy for some time when we discovered that its provisions were not as broad as we thought the requirements of the situation demanded. We found there were accidents which did not constitute a legal claim against us, but which we thought that we ought honestly and fairly to recognize as having a claim on us. Not only was there an ethical claim, but we thought that in certain cases sound business policy would require us to regard a claim on us for compensation as valid. Feeling thus about it we made inquiry and found that there was another kind of insurance available which would meet our wants in this regard. On examination we found the cost was not more than any well-established business ought to stand, and so we took out our first collective accident insurance policy. It is a blanket policy; it covers any laborer we may have on our payroll during the term of the policy, and guarantees the following:

1. In the event of death within ninety days, one year's wages, not exceeding \$1,500.
2. For the loss of two limbs or two eyes, a sum equal to the amount payable under the policy at death.
3. For the loss of one limb, a sum equal to one-third of the amount payable under the policy at death.
4. For the loss of one eye, a sum equal to one-eighth of the amount payable under the policy at death, not exceeding \$200.
5. In the event of temporary disability, one-half the weekly wages for a period of not exceeding 26 weeks, such sum not to exceed \$500.
6. For such medical attendance as may be required on account of such accidents as are covered by this insurance.

We are now carrying the two kinds of indemnity, viz., insurance against legal liability to the extent of \$10,000, on any one life, and a blanket policy against accidents in favor of our employees as above stated. The total cost of both kinds of insurance is about two and one-half per cent of the pay

roll. That is to say, if you pay a man two dollars per day it is the same as if you paid him two dollars and five cents per day to carry this insurance. There are several companies offering this insurance, but the one we are insured in is the Fidelity & Casualty Co. Its treatment of us in a recent accident case was such that I am justified in saying that their dealing is not only just but generous.

Now a word as to results. Personally I can say that I am already fully repaid for the investment in the sense of added mental peace and security that comes from knowing I am protected from one of the most harrowing responsibilities of an employer of labor. The strain of operating a business is severe enough in its mechanical and financial side, but when to it is added the undefined moral obligation one feels to his fellow man and the great difficulty of meeting it in a conscientious way, the burden becomes too heavy. It is a great relief to find some way to make an adjustment that will partially, at least, recognize our human obligation and enable us to meet it.

But I think it will bring other kinds of compensation besides those based on sympathy and conscience. It is a valuable asset to have the confidence and good-will of your workmen. A contented and well-disposed workman will be a better producer. If five cents a day will cause a man to put good-will into his work who will say that it is not worth more than all it costs and more? I don't pretend that every man will respond in that way, for human nature is perverse, but the tendency will be in that direction. There are always some who will appreciate good intentions, even on the part of an employer, and will reciprocate in kind. In these days of strikes and labor agitations of all sorts, it seems to me a valuable thing for our workmen to feel that the employer is not wholly mercenary and conscienceless, that he is disposed to think of their welfare, and that so far as business conditions permit he is willing to do what he can toward making their lives safer, their cares fewer, and their incomes more dependable. This he can do in a measure by protecting them from the casualties of their trade, and by minimizing the fear and dread that every good man feels when he knows that the bread and butter of his wife and children are jeopardized every morning that he goes out to work. For the Streator Paving Brick Co., I am willing to say that we think it is a good investment.

Mr. Gates: What would the Insurance Companies do about paying doctor's bills?

Mr. Plumb: That is all included. I might remark, since there is no discussion at the moment, that there was a young man in our employ, earning \$2 a day, who had his leg broken. We felt kindly toward him and felt like giving him something. When he got well he came around to the office and brought his brother with him. His brother is a lawyer in Chicago. We talked it over a little while, and I said that if they wanted to appeal to us on the ground of sympathy we would talk it over. He asked us what we were willing to do. I told him. They retired and in a few moments they came back and said that they would not take it. That meant a law suit. I said that we had an agent in Chicago who would look after our side of the case; I gave them his address and changed the subject; I asked him how he was getting along in South Chicago and at Hammond, and did not refer to the object of their visit again. In a short time I put on my overcoat and went away. In about three days the young man came back again with a friend—not a lawyer—and asked me to re-state what I would do for him. I told him. And then he said, "I will take it". There was no lawyer and no law-suit.

Mr. Tiernan: Does this same Company take building contractors?

Mr. Plumb: I think that they will take almost anything. Mr. Hammerschmidt: At different rates.

Mr. Plumb: The rates are different. This rate that we are paying is not very high.

President Pratt: The next paper on the program is "Personal Injury Claims Against Clay Companies," by Walter H. Kirk, Attorney and Counselor, at Peoria.

#### PERSONAL INJURY CLAIMS AGAINST CLAY COMPANIES

I greatly appreciate and thank you for the privilege and opportunity to address you on this occasion. Had your secretary left me free to choose my own topic, however, I would have much preferred to follow another theme, in which I could have given you something more original—more my own—than I can in the treatment of a subject which will require the statement of principles and rules of law, laid down by courts and legal writers.

At the outset, let me say, that so far as I am aware there are no rules of law peculiarly applicable to your industry, which do not in like manner apply to all other lines of business where labor is employed. A proper presentation of my subject will therefore, it seems to me, resolve itself into a brief outline of the employer's rights and liabilities arising with respect to injuries received by his employees. That this is what is expected of me, I am further persuaded by certain clippings which your secretary has kindly sent me presumably to indicate the lines along which I should speak. With your permission I will read a few of these clippings.

#### SUES FOR \$10,000.

A suit for \$10,000 damages was commenced against the Robinson Clay Product company in common pleas court Tuesday by Vasil Strassinsky. The plaintiff had part of his hand cut off in a machine at the company's plant. He asks damages on the claim that the accident was the result of negligence on the part of the company.—*Akron (O.) Journal*, Oct. 30, 1907.

#### BRINGS SUIT FOR \$15,000.

Lee W. Servey, of Watertown, has filed a claim against the Sandstone Brick Co., Schenectady, for \$15,000 for alleged negligence in connection with the death of his son, Howard, a minor, who was killed by the explosion of a kettle at which he was working on June 29.—*Albany (N. Y.) Journal*, Nov. 23, 1907.

#### SUSTAINED INJURY IN SHALE PIT.

M. J. Siesmore, formerly in charge of the blasting work at the Altoona Brick Co.'s shale pit, sustained a severe injury while engaged at his work. A huge boulder, dislodged by the blast, came crashing down the side of the pit, striking him on the leg just above the ankle. The flesh is badly bruised and crushed. Siesmore is now in this city at the home of his sister, Miss Ollie Row. As soon as the injury will permit, he will begin work at the Western States cement plant.—*Independence (Kan.) Reporter*, Nov. 5, 1907.

#### SAYS BRICKS CAVED IN.

In Judge Rusk's division of the circuit court today, Henry Martin was suing the Phoenix Brick & Construction Co. for \$5,000 on account of alleged personal injuries sustained while working at the company's plant last summer. Martin was working inside a kiln constructed of "green" brick. The courses of brick which formed the arch of the kiln, he contends, were not properly "tied," which caused the walls to bulge, wobble, and finally collapse.

When the dust of the disaster had cleared away, testified one of the witnesses for the plaintiff, the kiln was a shapeless heap of brick, with Martin's head protruding from the apex. Martin alleges that almost every square inch of his body was bruised.—*St. Joseph (Mo.) Press*, Nov. 5, 1907.

#### INJURIES MAY CAUSE DEATH.

Emory Graham, superintendent of the Tempest Brick Co., at Manion near Montongahela, was probably fatally injured by being caught in a belt this afternoon. He was adjasting it when he was caught and thrown a distance of 25

feet. Two physicians attended him.—*Pittsburg (Pa.) Press*, Nov. 8, 1907.

#### HARRY PRESTON HURT.

Harry Preston, of Market St., superintendent of the Seward Brick Co., sustained a painful injury Monday while helping some of his men at the plant. A plank fell across his left foot, mashing it badly, but not breaking any bones. With considerable effort, Mr. Preston was able to go to Seward this morning.—*Johnstown (Pa.) Tribune*, Nov. 27, 1907.

#### CAUGHT IN A SHAFT.

Peter Marks, a workman, was caught in a shaft at the works of the Chicago Retort & Fire Brick Co., Friday morning and injured quite badly. The flesh on the back of one leg was torn and his back injured. He was brought to Ryburn hospital to have his injuries dressed.—*Ottawa (Ill.) Fair Dealer*, Nov. 9, 1907.

#### BIG DAMAGE SUIT IN THE CIRCUIT COURT.

Readers of the Free Trader will recall the death of young Carey at Utica last summer. He was a bright fellow about fifteen years of age. Shortly after school closed he went to work in the plant of the Utica Fire Brick Co. He was caught in some way and crushed or smothered to death. The case attracted considerable attention here at the time, because both the boy and his parents were well known in this city, where they had many friends.

Today the father, Charles A. Carey, began suit in the circuit court to recover damages in the amount of \$10,000 for the death of his son. Only a declaration was filed, so that it is not known upon what claims the liability of the company is predicated.—*Ottawa (Ill.) Free Trade*, Dec. 3, 1907.

We shall of course not attempt to pass upon any of these cases, but using them as an index to our subject we will proceed to consider the broad principles underlying and comprehending them all. The general rule is that the employer is liable for all injuries received by employees in the course of the employment, which are not occasioned by the carelessness or improper conduct of the employee. In other words, the employer must exercise reasonable care and diligence to provide the employee with a reasonably safe and secure place in which are machinery, tools and appliances with which to work, or he will be liable, unless the employee by his conduct assumes the risk or, by his own carelessness, contributes to the injury. Concerning the doctrines of assumption of risk and contributory negligence we shall speak in detail later on. Nothing herein stated, however, must be construed to mean that an employer is an insurer of the employee against accident or injury. He is only required to use and exercise such ordinary care and reasonable precaution for the safety of his employees as the nature and dangers of the business admit of and demand and, when he has done this, the law requires of him no more.

Whether he has performed this duty, however, often becomes a hard and close question of fact for a jury to determine. A case in point illustrating this principle and reported in the 77th North Eastern Reporter at page 385 entitled, *Reilly vs. Troy Brick Company*, is to this effect:

A common laborer working under the orders of either a bank boss or superintendent was killed by the giving way of a clay bank 65 to 70 ft. high. The bank rested upon a stratum of sand, and about seven months before this accident, a slide of clay had occurred at the same point which had furnished all of the clay needed for the making of brick up to this time. But the lateral support furnished by the first slide had been nearly all removed when the second one occurred, the workman having dug away the clay on the floor to a point about 15 or 20 ft. from the base of the bank. And this was done with the knowledge and acquiescence of the company's superintendent.

Under such circumstances, while the jury might well have found upon the evidence adduced that the ordinary inspection of the bank had not been neglected, the court of appeals of New York says that they might still have concluded that the larger (and as the court thinks) the more obvious duty of protecting the base of this bank had been overlooked. It was true that the employee in question was there daily, and that his experience, even as an ordinary laborer, might have enabled him to anticipate the danger quite as thoroughly as his superior ought to have done; but, whether he assumed that particular risk, or was guilty of contributory negligence under the circumstances detailed, were questions of fact for the arbitration of a jury. It could not be said as a matter of law that this common laborer, whose business it was to dig and to shovel, was chargeable with the same knowledge of existing physical conditions or possibilities as those whose primary duty it was to know all that a reasonably careful and prudent employer should have known or anticipated from what had gone before. In its final analysis the question was whether there was any evidence which, considered in the light of the practically undisputed facts as to the existing physical conditions and the circumstances attending the death of the employee, would warrant a jury in finding that the company had omitted to perform some affirmative duty which it owed to its employees engaged in working upon that bank. The court thinks there was such evidence.

The mere employment of a minor without his parents' consent about dangerous work is not negligence in itself, unless forbidden by statute, or unless the employer knows that he is a minor, and that the contract is made without the consent of his parent. But persons who employ minors must anticipate the ordinary behavior of children—must take notice of their lack of judgment and must exercise greater care toward and for them than is required by law to be exercised toward and for adults; and where a minor is employed in a business, the danger of which he is unable by reason of his immature judgment to comprehend, and is injured, the master is liable. If a minor answers falsely as to his age, and secures employment by so doing, in violation of a known rule against employing minors, it does not make him a trespasser or deprive him of his right to protection as an employee, when actually engaged in his employer's service. As to the acts which a master is bound to perform toward his employees, if he delegates the performance of them to an agent, the agent occupies the place of the master and the latter is deemed present and liable for the manner in which they are performed.

Neither the state nor its public officers can be held liable by a convict for injuries received by him while employed during his confinement but, an individual or company which employs convict labor, may be held liable; and the fact that the convict is under the general charge of a state officer, or that his wages go to the public, does not relieve the employer of liability. The fact that a volunteer was requested or ordered by a servant of the master to give his assistance will not authorize him to recover for personal injuries on the ground that he thereby became a servant of the employer unless, by reason of his position or the necessities of the case, such servant had authority to make the request. On the other hand, the fact that a person is a volunteer does not deprive him of his right to be protected by the same degree of care which the master owes to other strangers.

For an injury which results from pure accident or from causes which could not be reasonably anticipated, unaccompanied by want of ordinary care on the part of the master, he is not liable. But the fact that an accident was so unusual and extraordinary that it could not reasonably have been expected to happen, does not relieve the master from the effect of his negligence and where the injury is such as might have been reasonably anticipated he is liable.



A contract between master and servant, before the happening of an injury, whereby the servant, in consideration of the employment, or of the wages, agrees to release and discharge his master from liability on account of injuries caused by the negligence of his master or if the latter's servants is void as against public policy, especially where such contracts are forbidden by statute, or where the liability is of statutory origin. But a contract whereby an employee agrees, on becoming a member of his employer's relief association, that the acceptance of relief therefrom on being injured shall bar his right of action against his employer for the injury, is not void as against public policy, nor for want of consideration or mutuality; and the acceptance of benefits, under such a contract, bars an action for damages. There is no waiver of any right of action that the person injured may thereafter be entitled to. It is not the signing of the contract but the acceptance of benefits after the accident that constitutes the release. The injured party, therefore, is not stipulating for the future, but settling for the past; he is not agreeing to exempt the company from liability for negligence, but accepting compensation for an injury already caused thereby.

It is the positive duty of a master to furnish his servant with reasonably safe instrumentalities wherewith, and places wherein to do his work and, in the performance of these obligations imposed by law, it is essential that regard should be had, not only to the character of the work to be performed, but also to the ordinary hazards of the employment, and the servant may assume that the master has performed such duty. This rule does not apply where the servant makes an improper or unusual use of the appliances furnished him or where the place becomes unsafe during the progress of the work. The master is not an insurer of his servant's safety, but is only required to exercise such ordinary care and diligence as may be reasonable in view of the work to be performed and the dangers incident to the employment. Nevertheless, the degree of care which the law requires of the master is greater than that which is required of the servant, and the master may be chargeable with negligence in failing to ascertain a danger, where the servant is not. The master is not required to furnish the newest, safest and best machinery, appliances, and places for work, but his obligation is met, when he furnishes such as are reasonably safe and suitable for the purpose had in view. But in all occupations, attended with great and unusual danger, there must be used all appliances readily attainable which are known to science for the prevention of accidents, and the neglect to provide such readily attainable appliances is proof of culpable negligence. While not conclusive on the question of negligence, evidence is generally admissible in an action for personal injuries to show whether or not the master's machinery, appliances, ways and methods are such as are in ordinary and common use by others in the same business. But customary negligence, either on the part of himself or others, is no defense; nor can he set up a custom which is in contravention of positive law. Negligence cannot be imputed to a master merely by reason of the fact that the instrumentalities or places furnished by him are dangerous but, where the service required of a servant is of a peculiarly dangerous character, it is the duty of the master to make reasonable provision to protect him from the dangers to which he is exposed while engaged in the discharge of his duties. Where the master knows or should know that an animal used by him is vicious, or that his harness or vehicle is not reasonably safe, he is liable for injuries to his servant caused thereby.

A master owes to his servant to furnish him with a reasonably safe building or other place in which to do his work and is liable for injuries occasioned by his negligence in this regard. This rule, however, does not apply to a case where

servants are creating a place of work, when it is constantly changing in character by their own labor, as in the laying up of a brick kiln or, when it only becomes dangerous by the carelessness or negligence of the workmen; when the dangers which arise are very short-lived or when, by the negligence of the workmen, the place is rendered unsafe without the master's fault or knowledge. Where a master furnishes, or causes to be built under his direction and control, a platform, scaffold, staging or like structure for the use of his servants in the prosecution of their work, it is then his duty to exercise ordinary care to see that it is reasonably safe for the purpose contemplated. But where the structure is erected by the workmen from material furnished by the master and the master has no direction or control of the construction, he is not liable for injuries sustained by one of the workmen by reason of defects in the structure, provided, he has used reasonable care in the selection of proper and suitable material. This is the only duty which the law imposes upon him.

Where a master uses elevators, hoistways, runways, shafts or like appliances in his business, he must use ordinary care to see that they are reasonably safe and suitable for the purposes for which they are intended. The master's duty is, however, performed where he purchases such appliances from reliable and competent manufacturers, has the same placed in working order and regularly inspected by experts.

Where a servant is employed in a quarry, tunnel, pit, trench, or other excavation, the master owes him the duty to use ordinary and reasonable care and diligence to make his place of work as reasonably safe as the nature of the work will admit, and must comply with all statutory requirements which have been enacted for the protection of the servant. Where, however, it is the duty of the workmen to shore up, or otherwise make safe the place of work as the work progresses, the master's duty is fulfilled when he furnishes them with suitable materials for the purpose, nor does the general rule apply to a place which is constantly changing by reason of the work done.

A master is bound to use ordinary care to protect his servants from dangers which may be reasonably anticipated from open and unguarded hatchways or chutes. It is not only the duty of a master to use ordinary care to furnish his servants with a reasonably safe place to work and with reasonably safe machinery and appliances, but he must also, by inspection from time to time and by the use of ordinary care and diligence in making repairs, keep them in a reasonably safe condition.

Nevertheless, the rule is well settled that the mere failure to inspect is not negligence, where an inspection would only show what was already known to the servant and all others. So too a master is under no obligation to his servants to inspect during their use those common tools and appliances with which everyone is conversant; nor is it the master's duty to repair defects arising in the daily use of an appliance for which proper and suitable materials are supplied, and which may easily be remedied by the workmen, and are not of a permanent character or requiring the help of skilled mechanics. While a master is bound to keep his machinery in reasonably safe condition, he is not required to keep it in the best possible order. Nor again, is a master required to exercise that exquisite and exhaustive care in the constant examination and overhauling of his machinery and work, which would be incompatible with the proper furtherance of his business.

Reasonable care in the matter of inspection requires a master to make such an examination and test as a reasonably prudent man would deem necessary under the same circumstances for the discovery of possible defects, and he is not required, unless put upon notice as to the probable

existence of defects, to employ unusual or extraordinary tests nor to adopt the latest and most improved methods of testing machinery or appliances. The reasonableness and sufficiency of an inspection, when made, is a question of fact for the jury. While a master is entitled to a reasonable opportunity for inspection, the duty is a continuing one and must be performed at reasonably frequent intervals and whenever the circumstances are such as to suggest the propriety of inspection; the fact that the master has purchased a completed and presumably tested structure from another, does not relieve him of the obligation to take reasonable care to know or ascertain the safety of its design and construction and he will be charged with knowledge of such defects, if any, which a competent examination would have disclosed.

Where machinery or appliances have been carefully tested and found to be in good condition, the master is not liable for injuries resulting from defects which were not disclosed by such test. But to excuse him from liability, it must appear not only that the inspector was competent, but also that the inspection was a reasonably careful one, and a master, by having appliances inspected to determine whether they are safe and fit for a certain use, does not relieve himself from responsibility to a servant, who, acting under orders, devotes them to use totally different from that with respect to which such inspection was made. The master's liability for injuries to a servant arising from defects in the place of work or in the machinery or appliances is dependent upon his knowledge, actual or constructive, of such defects. If he knew or should have known, by the exercise of reasonable care and diligence, of their existence, he is liable; negligent ignorance is equivalent to knowledge but, if he had no knowledge thereof and his ignorance was not the result of want of due care, he is not liable.

Where the defect in an appliance is shown to be structural and is of such a character as renders it unsafe, it may be inferred that the employer was aware of the defect and an employee who has been injured by such an appliance need not show that the master knew that it was defective. But if a particular structure, machine or appliance is without fault as to plan, mode of construction and character of material, so that it was originally sufficient for all the purposes for which it was designed, and if the master has it afterward properly inspected by competent and skillful men who exercise ordinary diligence to keep it in repair, the master has discharged his duty and is not liable to a servant for an injury received by reason of a defect therein, unless it is shown that he had knowledge of such defect and failed to remedy it. While there is a presumption that a master, having knowledge of defects in the place for work, or in the machinery or appliances, has knowledge of the consequences which may result therefrom, and will be held liable for injuries to a servant resulting from known and probable dangers, yet he is not liable for the result of hidden or improbable dangers of which he did not have and, by the exercise of reasonable care, could not obtain knowledge. But facts which do not necessarily operate to charge a servant with notice of the danger arising from the defective condition of machinery, may operate to charge the master with such notice, since the obligation upon each arising from the mere knowledge of the defective condition is not alike.

A master is not bound to provide a safe place where the work on which the servant is engaged is such as to render the place where it is done temporarily unsafe. The rule as to the duty of the master with regard to the place of work, machinery, and appliances does not apply to cases in which the work the servant is engaged upon consists in making repairs. Where the place of work, machinery, or appliance was reasonably safe and suitable for the purpose for which it was intended, a servant cannot hold his master liable for per-

sonal injuries resulting from its inappropriate, unauthorized, unnecessary, careless, improper or unusual use or test. But when an appliance is improperly used with the knowledge of the master, it makes no difference, so far as his liability for such improper use is concerned, whether or not it was originally built for such purpose; and where a master subjects an appliance to an unusual and unanticipated service or strain, by reason of which a servant is injured, he will be held liable. Such reasonable care is required of the master in the methods of work adopted by him, as is commensurate with the danger to be reasonably apprehended, and as reasonable and prudent men would exercise under similar circumstances for their own safety.

Where a master is engaged in a complex or dangerous business he must adopt and promulgate such rules and regulations for the conduct of his business and the government of his servants in the discharge of their duties as will afford reasonable protection to them. While the adoption or non-adoption of rules by others in the same line of business is not conclusive as to the duty of the master in this respect, yet, as a rule, his adoption of such regulations as are in general use will relieve him from liability; and where there is no evidence that any rules relating to the business had been adopted by others or were necessary or practicable, he is not chargeable with negligence in failing to adopt any. On the other hand, if persons of ordinary prudence, engaged in the same line of business, have found it necessary to provide rules for its management, the failure of a master to prescribe such rules is evidence of negligence. It is the duty of the master to use reasonable care to see that the rules adopted by him for the safety of his servants are complied with and if he fails to do so he will be responsible for injuries resulting from non-compliance therewith.

The presumption is that rules which the master has adopted for the government of his servants to prevent injuries are reasonable and sufficient. But to require obedience, a rule must be practicable and possible of performance; and where under the guise of rules, a master seeks to evade duties imposed upon him by law, the servant is not bound thereby. To relieve the master of liability for injuries to a servant resulting from the disregard of the rules adopted by him for the management of his business and the government of his servants, the servant must have had knowledge, actual or constructive, of the rule. But knowledge, however acquired, is sufficient to bind the servant, although the master has failed to give him notice of its existence or to afford him a reasonable opportunity to ascertain its terms. When the rules and regulations established by the master are habitually disobeyed, with the knowledge or express consent of the master, or have been disregarded without his express consent in such a manner and for such a length of time as to raise a presumption that he must have become aware of such habitual disregard and approved the same, such rules and regulations will be regarded as waived.

A master will not be bound by orders given by an unauthorized person, even though the servant believed that it was his duty to obey such orders, unless the master has clothed the person giving the order with such apparent authority as to justify the servant in believing that he was in fact authorized. Since it is the duty of a servant to obey any order given by one in authority over him (if not manifestly unreasonable), the master must use reasonable care to protect his servants from danger in the execution of orders and will be held liable for his own or his vice-principal's negligence in this regard.

When a master knows that a servant is inexperienced or not of an age to appreciate the danger incident to an act which he is ordered to do, the master will be held liable to the servant for injuries received by him while executing an order when the master knows, or ought to know, it involves

danger. But it is not negligence for a master to set his servant to a piece of work, where such servant is of sufficient age and intelligence to appreciate the risk, which is both apparent and incident to the particular work.

It is the duty of the master to warn and instruct his servant as to defects and dangers of which he knows or ought, in the exercise of reasonable care and diligence, to know, and of which the servant has no knowledge, actual or constructive. But a master is under no obligation to warn his servant of a special danger which springs out of a particular fact, which in its details cannot be anticipated, nor generally of any dangers that cannot be reasonably apprehended. So too a master need not warn a servant of a risk naturally incident to the employment, unless he knows that the servant is ignorant thereof. The duty of warning and instructing a servant is a primary duty of the master, and the delegation of such duty to another servant, whether higher or lower in the scale of employment than the one exposed to danger, cannot relieve him of the responsibility imposed on him by the law. The master's liability in respect to warning and instructing his servant depends upon his knowledge, actual or constructive, of the defect or danger to which his servant was exposed, and negligence cannot be imputed to him unless he knew, or ought, in the exercise of reasonable and ordinary care and diligence, to have known, that a warning was necessary. A servant has the right to rely on the warnings and signals customarily given in the conduct of the business, and if the master fails to give these, he is negligent.

To be sufficient, a warning or instruction must be so plain and explicit that the servant will understand and appreciate the danger and know how to avoid it by the exercise of due care and where extraordinary risks may be encountered, the servant should be warned of their character and extent, so far as possible. But it is not necessary that the servant should be warned of every possible manner in which injury may occur to him, or of risks that are as obvious to him as to the master or which are readily discoverable by him by the use of ordinary care, with such knowledge, experience, and judgment as he actually possesses, or as the master is justified in believing him to possess.

It is the duty of the master to warn his servants of new or increased dangers caused by a change in his machinery, appliances or place or methods of work, and he will be held liable for injuries resulting from his neglect of duty in this respect. While a servant does not assume the extraordinary and unusual risks of the employment, the rule is well settled that on accepting employment he does assume all the ordinary and usual risks and perils incident thereto, whether it be dangerous or otherwise, and also all risks which he knows or may, in the exercise of reasonable care, know to exist. He does not, however, assume such risks as are created by the master's negligence, nor such as are latent, or are only discovered at the time of the injury.

The doctrine of assumption of risk is distinct from that of contributory negligence, and rests upon an agreement of the servant with his master, expressed or implied from the circumstances of his employment, that his master shall not be liable for any injury incident to the service, resulting from a known or obvious danger arising in the performance of the service. The doctrine of the assumption of obvious risks by the servant applies, however, as well to those which arise or become known to the servant during the service, as to those in contemplation at the original hiring.

In the absence of knowledge to the contrary, a servant has a right to presume that his master has exercised due care and diligence to fulfill the obligations imposed on him by law, and he does not assume the risk consequent upon the failure of the master to discharge such duty. The rule does not, however, apply where the servant is charged with the duty of keeping the appliances by which he is injured in

proper repair. Neither does it apply where he is injured while he is repairing and making an unsafe place safe.

A servant does not assume the risk of accident and injury due to the failure of the master to exercise reasonable care in furnishing him with a reasonably safe place to do his work. But he does assume all risks which are necessarily incident to his employment, or which are obvious or known to him. The fact that the work in which he is engaged or the methods of work in use are of a peculiarly hazardous character, does not affect the rule as to the assumption of incidental or obvious risks by a servant. Notwithstanding the fact that the service is a dangerous one, this adds nothing to the liability of the master for injuries resulting from the nature and ordinary incidents of the undertaking; and where there are two or more ways in which a servant may perform his duties and he voluntarily chooses an unusual or more hazardous method, knowing it to be such, he does so at his own risk. The voluntary choice of an unusual or more dangerous method of work by the servant is scarcely distinguished from contributory negligence, and is so regarded in many decisions. The doctrine of assumption of risk is wholly dependent upon the servant's knowledge, actual or constructive, of the dangers incident to his employment. Where he knows, or in the exercise of reasonable and ordinary care should know the risks to which he is exposed, he will, as a rule, be held to have assumed them; but where he either does not know, or knowing, does not appreciate such risks, and his ignorance or non-appreciation is not due to negligence or want of due care on his part, there is no assumption of risk on the part of the servant preventing a recovery for injuries.

The general rule is well settled, that where the master and servant are possessed of equal knowledge or means of knowledge of defects and dangers or, where they are equally ignorant thereof, the servant assumes the risk. But if the master knows, or is under an obligation to know, of dangers of which the servant is ignorant and of which he is not under an equal obligation to know, there is no assumption of risk. A servant assumes not only such risks as, from the nature of the business as ordinarily conducted, he must have known, but also those which the exercise of his opportunities for inspection would have disclosed to him. On the other hand, he is not charged with the assumption of risks which are not incidental to his employment, and of which he has had no opportunity to learn.

Ordinarily a servant is charged with no duty of inspection to discover latent defects or danger, but, where it is a part of his duties to discover or remedy defects in the master's appliances or places for work, he will be held to have assumed the risk of injury therefrom, provided they are discoverable from inspection. The rule that a servant has the right to rely upon the performance by his master of the duties imposed on him by law for the protection of his servants is qualified, by the further rule that where a servant knows, or is charged with knowledge of danger, and continues in the master's employment voluntarily and without complaint and without any promise that the defect will be remedied or the danger removed, he assumes the risk of any injuries which may result from such defect. This rule is not, however, without qualifications. Thus it has frequently been held that a servant, after learning of the risks, is entitled to time and opportunity for making complaint and that he may continue in the employment a reasonable time for the master to remedy the defects and remove the danger.

But, in complaining of defects or dangers it is not necessary that the servant shall state in exact words that he apprehends danger to himself, nor need there be a formal notification that he will leave the service unless the defect is repaired or the danger removed. It is sufficient if from the circumstances and conversation it can be fairly inferred

that the servant was complaining on his own account and that he desired the removal of the danger. To be sufficient, a complaint must be made to the master or his vice-principal, or to some one charged with the duty of remedying defects, and not to a fellow servant. However, the fact that a servant has complained of defects and dangers will not relieve him of the assumption of risk if he continues to work, without any assurance or promise by the master that the danger will be removed. But it has been held that where the fact that machinery is unfit for use is brought to the attention of the master, the servant is absolved from increased risk.

Where the master or someone acting in his place promises to remedy the defect complained of, the servant by continuing in his employment for a reasonable time after such promise does not assume the risk of injury from the defect unless the danger was so patent that no person of ordinary prudence would have continued to work. This rule does not apply, however, in the case of ordinary labor with common implements, with which the servant is perfectly familiar or where neither the master nor the servant contemplates any increased danger to the latter from the continued use of the defective appliance. Nor does the master's promise relieve the servant from the duty of exercising such care as is reasonably commensurate with the danger complained of and where the promise is to repair after the completion of the work on hand, the servant assumes the risk of injury until such time by continuing at work.

The promise of a vice-principal or representative of the master is as binding as the promise of the master himself, and it is immaterial whether the servant making the promise had authority to do so, provided the injured servant upon reasonable grounds, supposed that he had. In order that a servant may be relieved from the operation of the doctrine of assumed risk from a defect complained of and the danger of which he was no longer willing to incur, it is essential that his remaining in the employment was induced by the promise of the master to remedy the defect, when he would not otherwise have done so. But, if the servant remains in the service longer than a reasonable time after the master's promise to repair the defect, he will be held to have assumed the risk. In some cases it is held, that what is a reasonable time is to be determined by the time which might reasonably be required by the master in which to make the repairs; while in others it is held that the servant is entitled to remain for any period which will not preclude the reasonable expectation that the promise will be kept. Where the master fixes a definite time within which the repair is to be made, the servant may wait until the expiration of the time named, but no longer.

Where the negligence or want of ordinary care and caution, of a servant so far contributes to his injury that it would not have occurred but for such negligence, he cannot as a general rule recover therefor. If, however, the injury is caused by the gross or wilful negligence of the master or vice-principal, or, if the consequences of the servant's negligence might have been avoided by the exercise of ordinary and reasonable care on the part of the master the servant may recover, notwithstanding his contributory negligence.

Where a servant has actual or constructive knowledge of defects and dangers of such a character that a reasonably prudent man under similar circumstances would exercise due care to avoid the dangers, and is injured by reason of his failure to use ordinary care, he is guilty of contributory negligence. But if a servant had no actual knowledge of the danger which threatened him and, in the exercise of ordinary care would not have apprehended the danger in time to avoid it, he can recover. Where a servant continued work with knowledge, actual or constructive, of dangers which an ordinarily prudent man would refuse to subject himself to, he is guilty of contributory negligence; but where there is

nothing to show that the danger which a servant encountered was so imminent that any reasonably prudent man would have abandoned the work, the servant in continuing to work is not guilty of such negligence as will bar his right to recover for injuries sustained by him. Whether a servant is guilty of contributory negligence in continuing at work after notice or complaint to the master of defects or dangers is generally a question of fact for the jury; the mere fact that the servant has complained to the master will not exonerate him of contributory negligence unless he has reason to expect that in consequence of his notification to the master, the defect will be repaired before he will be subjected to danger from it.

The case of *Hughes vs. Fayette Manufacturing Co.* (63 Atlantic Rep. 692) decided by the Supreme Court of Pennsylvania illustrates this rule: Hughes, the plaintiff, was employed as a brick molder in the works of the defendant company. He worked at a table in the mixing room, which was near the machinery by which the material used to manufacture the brick was broken and ground. This consisted of a pan set on the floor, in which heavy rollers were revolved by means of a vertical shaft in the center of the pan. The shaft was attached to a horizontal wheel some 8 ft. from the floor, and this wheel weighed over 1,000 lbs and was 5½ ft. in diameter. The wheel was furnished with cogs and teeth, and was operated by another cogwheel connected by a shaft with the electric power. While in operation, this wheel turned slowly, making only about 38 r. p. m. While the machinery was in operation, the plaintiff noticed that sparks were flying from the crown wheel, and also that it was making a screeching noise. He had noticed the sparks the afternoon before, and had then spoken to his brother, who worked in the same room, about it; and the latter testified that "the machinery was not working quite in order." Both the plaintiff and his brother testified that shortly after the superintendent of the mill came in, and they both called his attention to the sparks flying from the wheel, and the plaintiff said "that wheel there did not look quite right to me," and that he did not care about working at the pan. The superintendent told him to go ahead, that there was no danger, and that he would have it fixed. After the alleged conversation with the superintendent, the plaintiff went back to his table and continued to work. In about half an hour the crown wheel broke into three pieces, one of which fell upon his leg, inflicting serious and permanent injuries. There was no positive evidence as to the cause of the breaking of the wheel. The court affirms a judgment for damages in the plaintiff's favor.

The court says that if the evidence of sparks from the machine was the only thing in the case, there should have been no submission to the jury, as the mere absence of oil, or the presence of particles of dust, will cause sparks to fly, as was shown by uncontradicted evidence. But there was much more in the case than this. The plaintiff testified that the wheel was making a screeching noise on the day of the accident, as well as emitting sparks; and he complained to the defendant's superintendent that he did not like the looks of things, and was averse to continuing his work at that point. In reply, the superintendent told him to go ahead with his work, that there was no danger and that he would have it fixed. In view of the evidence of the screeching noise, and the fact that so many witnesses noticed the fire flying, it would seem that there was more friction in the working of the machinery than usual, and that it may have indicated more serious trouble than the mere lack of oil or the presence of dust. This court does not feel it can say as a matter of law that the jury was not justified in finding that the defendant was negligent in failing to examine and readjust the machinery, when complaint of its improper working was made. It will not do to hold that in such cases as this the

plaintiff must make an absolute explanation as to the actual cause of the accident. The reason for the breakage of machinery which is run under heavy strain is oftentimes obscure, and it would seem that where, as in this case, the operation of the machine was so obviously abnormal as to frighten experienced workmen, the jury might be justified in saying that the defendant was negligent in ordering the plaintiff back to work without stopping the machinery and having a careful examination made, in order to detect the cause of the trouble.

There is a distinction between knowledge of defects and knowledge of the risks resulting from such defects, and a servant is not chargeable with contributory negligence, if he knows that defects exist, but does not know, or cannot know by the exercise of ordinary care, that there is danger; and even the fact that a servant has performed work knowing it to be dangerous, does not of itself make him guilty of contributory negligence, but it must appear that he did that which was dangerous in a negligent manner. It is the duty of a servant to use the appliances furnished him by his master for the prosecution of his work, and where proper appliances have been furnished him and he is injured by reason of his failure to use them, he cannot recover, if he knows, or is charged with knowledge of the fact, that they have been furnished. Similarly, where appliances for doing certain work can be picked up at any time around the place of work, the failure of the master to furnish them specially does not render him liable for an injury to a servant, caused by his not using them. If, however, the servant, on the exigency of the occasion, uses the appliances most convenient and they fail to operate properly, then the defective appliance is the proximate cause of the injury, and the servant is entitled to recover. When proper appliances are furnished to, or are procurable by a servant, and he voluntarily and unnecessarily elects to use an improper, defective or dangerous appliance and is injured, his negligence will bar a recovery.

Where a servant unnecessarily and of his own volition uses an unsafe way or place to do his work when other and safer ways or places are available, he cannot recover for injuries sustained by reason of his negligent action, if the danger is such that no ordinarily prudent person would incur it under like circumstances. But a servant is not guilty of contributory negligence in using a way kept open as a common passage or thoroughfare of the master; and where there are different ways over which a servant can pass in the performance of his duties, and all of them are apparently equally safe, the act of choosing one in preference to the others will not preclude a recovery for injuries sustained while passing over it. As a legal proposition, independent of any rules provided by the master, if a servant selects a dangerous way to perform a duty knowing it to be attended with danger when there is a safe way apparent to him, and he undertakes to perform the duty in the dangerous way, and in consequence thereof, is injured, he is guilty of such contributory negligence as to cut off all legal remedy for the injury. But, the mere fact that a servant is injured because of the way of performing a duty selected by him when, if he had selected another way, injury would have been avoided, does not conclusively show contributory negligence; and where two or more methods of doing his work are open to a servant, and he has no instructions to pursue a particular method, he is not negligent if, in good faith, he adopts that which is more hazardous, if it is one which reasonable and prudent persons would adopt under the same circumstances.

It is contributory negligence for a servant to attempt to do his work without or with insufficient help, where sufficient help is available and he fails to call for assistance. Where a servant sustains injuries by reason of his improper use of machinery, or appliances furnished for the work, he

cannot recover, in the absence of evidence showing that his use thereof was with the acquiescence, or at least with the knowledge of his master.

Where a servant is injured by reason of his disobedience of the rules or orders of his master, he is as a general rule guilty of such contributory negligence as to bar a recovery, provided, he either knew or was charged with knowledge thereof. Where a rule is habitually violated with the knowledge and acquiescence, either actual or imputed on the part of the master of those who are acting as his representatives, a servant will not be charged, as a matter of law, with contributory negligence in acting in disregard of it.

A servant cannot recover for an injury caused, or contributed to, by his failure to regard a proper warning or signal, even though his mind was absorbed in his work at the time and he did not fully comprehend the extent of his danger. But the master is not relieved from liability where the danger would not have been avoided by the servant's compliance with the warning. Where a servant is injured as the result of an act done by him under an impulse or on a belief created by a sudden danger caused solely by the master's negligence, he is not to be regarded as guilty of contributory negligence, even though the act would be regarded as a negligent one if performed under circumstances not indicating sudden peril.

A servant is not guilty of contributory negligence where he is injured while attempting, in the face of imminent danger, to avert an accident or to save the lives of others, unless the attempt is made under circumstances constituting rashness in the judgment of prudent persons. Contributory negligence will not be imputed to a servant where he is injured while making a reasonable effort to save his master's property in an emergency, even though his own acts, in connection with others, occasioned the threatened danger.

This brings us lastly to a brief consideration of the fellow servant doctrine concerning which the Supreme Court of the United States within the past few days has handed down a decision of the highest importance. While the act of Congress held void for constitutional reasons, applied especially to common carriers yet, from the newspaper accounts of the Court's decision, we are led to believe it will, on closer reading, be found to reassert the time honored and well established fellow servant rule—which is, that where the master has furnished proper means for carrying on the work and has used due care in the selection of his servants, he is not liable for injuries to a servant caused by the negligence of a fellow servant engaged in the same general business. The reason of this rule is, that the negligence of a fellow servant is one of the risks incident to the employment and is assumed by the employee. It has also been said that public policy is another reason for the rule.

By placing upon servants the responsibility for each other's safety it is calculated to make servants in a common employment watchful of each other and thereby promote carefulness in the performance of their duties. Nor can this rule work hardship upon the servant, because his entering upon the service is wholly voluntary, is with full knowledge of its dangers, and with the right and opportunity to demand such wages as he shall deem compensatory therefor.

Gentlemen, I find I have taken more of your valuable time than I had intended and doubtless more than you wish I had, but my apology must be the breadth and importance of the subject assigned me. In conclusion, let me leave this thought with you. By all means whatever the size of your plant or the number of your employees, protect yourselves against any and all liability for personal injuries, as you would protect yourselves against cyclone, tornado or fire—carry employer's liability insurance. Just as your entire business might be swept away by fire, so might it be by a catastrophe maiming and crippling if not killing outright several of your

employees. Good business methods dictate and require this present-day safeguard and protection.

Moreover, to procure a low rate and to reduce to a minimum your premium cost for this protection, you will keep fully up with and abreast of the times and install every new and useful invention and appliance to reduce exposure and risk. This will result at the same time in vast good and benefit to your employees, making their employment not only safer and happier but increasing their own producing efficiency and thereby reducing for you the manufacturing cost of your finished product. Still another observation to be made and to which your attention has no doubt been time and again directed is this: Under employer's liability insurance you are relieved of the anxiety, strain and expense of arranging for and taking care of your defense, when an accident occurs.

It passes directly into the hands of skilled and experienced adjusters and lawyers who, by specializing and devoting themselves exclusively to this single line of work, reach the highest degree of skill and efficiency in the handling of the employer's side of a personal injury case. Such knowledge, skill and experience thus obtained is highly necessary and to be desired at such a time, since in nearly every manufacturing center there are other lawyers who specialize and are expert in the handling of personal injury claims. So that in this strenuous day of concentration and specialization, it is equally as important for you to have at a minimum cost the best legal talent you can retain, to defend you against excessive and unjust claims when they arise, as it is for you to install and make use of the highest type of labor-saving and product-producing machinery. At such a time the very best you can get is none too good.

President Pratt: The next paper taken up will be "Controlling, Drying and Burning Operations," by Prof. A. V. Kleininger, Director of Ceramics at the University of Illinois, Champaign.

#### CONTROLLING, DRYER AND KILN OPERATIONS

By controlling the operation of a dryer or a kiln we mean, naturally, the adjustment of conditions so that the greatest efficiency is produced. Without discussing the different principles of dryer and kiln constructions we shall proceed at once to the consideration of the subject of this paper. For purposes of clearness let it be stated that our discussion deals with the continuous tunnel dryer and the down draft kiln of any shape.

The process of drying evidently is influenced by several factors which are as follows:

1. The rate of evaporation of water evidently is proportional to the surface of the ware. In other words, more pounds of water are evaporated from thin ware, like drain tile per minute than from brick, since obviously the former present a larger area per ton of clay than the latter.

2. The amount of water evaporated depends upon the humidity of the air. By this we mean the difference between the existing aqueous pressure and the aqueous pressure which would be found if the air were saturated. In order to make this clear we must realize that the water vapor in air, which is never absent exerts a certain pressure, and this pressure at any given temperature is greatest when the air is saturated, that is, when it holds as much steam as it is possible for it to contain. Now, when air is not saturated with steam the latter also exerts a pressure but evidently this is lower than in the saturated condition. To illustrate, supposing we have air at 20°C, and it is saturated with steam. Its steam pressure is then equal to 17.4 mm. mercury. Again, taking air at 20° we find it, say, to show a vapor pressure of 10 mm. We can say, therefore, that evaporation is proportional to  $17.4 - 10 = 7.4$ . The greater this difference, the more water will be evaporated. For this reason the evapora-

tion proceeds faster with a higher temperature than a lower one. For instance, supposing for the sake of simplicity the water vapor pressure to remain at 10 mm, the evaporation value for 30° =  $31.5 - 10 = 21.5$ ; for 40° it is,  $54.9 - 10 = 44.9$ ; for 50,  $92 - 10 = 82$ ; for 60°,  $148.8 - 10 = 138.8$ . At 60° therefore evaporation proceeds 18.7 times as rapidly as at 20°.

The water vapor pressures of saturated air can be obtained out of any book dealing with the subject of heat, for any desired temperature and the real water vapor pressure under any conditions is found by simply taking an accurate thermometer whose bulb is wrapped with wet muslin and reading its temperature. On looking up the vapor pressure corresponding to this temperature in a table the actual steam pressure of the air is found. Subtracting the water pressure of the wet bulb thermometer from that of the dry bulb we again obtain the evaporation value as has been shown before. In saturated air of course, both the dry and the wet thermometer read the same and no evaporation takes place.

3. The rate of evaporation is inversely proportional to the barometric pressure. At high altitudes therefore drying takes place more rapidly than in lower locations.

4. The more rapidly air passes between the bricks the faster they will dry.

The conditions most favorable to speed of drying are thus: High temperature, dryness of the air, large surface of the ware, rapid change of air and low barometric pressure.

In observing the operation of a dryer there are evidently three points to be observed.

1. Temperature and humidity. 2. Velocity of air. 3. Regularity of operation.

On the outset, of course, we realize as clay workers, that the fastest drying is by no means the best and that the nature of our clay requires careful consideration. We must understand that he tunnel dryer, as usually operated, contains three zones, the steaming, the evaporating and the heating stage. In the first the clay is brought from the outside temperature to the temperature at the end of the dryer without causing any drying to take place, the aim being to heat the brick uniformly throughout its mass. It is of the greatest importance that this be done for if the clay were heated in dry air, evaporation would proceed at the surface while the interior of the brick would be still at the temperature it had when brought into the dryer. The result would be a tension between the outside and the inside of the brick since the outer portion would shrink away from the interior.

The result would be cracking or straining of the ware which would render the product worthless or would at least injure its strength seriously. Evidently the finer grained and the more plastic the clay the more thorough must be this steaming stage. With some clays the steaming must be extended so long that the continuous dryer becomes impossible and must be replaced by the periodic dryer. Many manufacturers do not pay as much attention to this point as they should and they suffer the consequences. Many a clay if treated more rationally would redeem its reputation as a poorly drying material.

The steaming stage hence must govern the operation of the dryer. This means that at the wet end the air must escape nearly saturated with vapor at all times. The humidity of the air leaving the dryer is easily determined by means of the wet and dry bulb thermometer whose use has already been indicated. This instrument consists of two thermometers, the bulb of one of them being covered with muslin to which a cotton wick is fastened. The latter is immersed in a small receptacle containing water. Consequently the dry bulb thermometer indicates the atmospheric temperature and the wet bulb thermometer the temperature

## CLAY RECORD.

of the dew point. Looking up the aqueous pressures corresponding to these temperatures we divide the pressure obtained for the wet thermometer by the pressure of the dry and multiply by hundred. The result will be the humidity expressed in per cent. This should be close to about 97 per cent and should not be allowed to rise higher. The remaining part of the problem must be to use as high an initial temperature in the dryer as the clay will safely stand, and to impart to the air such a velocity that it is nearly saturated at the upper end and yet will leave the dryer fairly rapidly so that no sluggish pool of moist air is formed at the end of the dryer. In dryers using the waste heat from kilns it is important that the temperature of the hot air be carefully regulated inasmuch as considerable loss may be caused by an excessive temperature. For this purpose long stemmed thermometers protected by iron pipe are inserted into the flue beneath the dryer as well as into the lower part of the tunnel itself. A number of satisfactory instruments for this purpose are now on the market. The dryer flue temperature may also be measured by means of a carbon nickle couple and milli-volt meter.

In the case of steam dryers with ample heating surface the temperature need not be considered and the only remaining factor is the regulation of the velocity of the air through the tunnels by varying the speed of the fan. When a stack is used this should be of ample height giving more draft than is needed so that regulation becomes possible.

The velocity of the air is measured by means of the anemometer, consisting of a small fan running in jeweled bearing which is geared to a recording dial indicating the velocity of the air current in feet. By placing the instrument at right angles to the current of air, noting the time and releasing the fan the number of feet may be read off. Multiplying this by the correction factor of the instrument will give the real velocity in the time noted. By measuring the velocity in several portions of the tunnel the average velocity may be obtained. After the proper humidity has been attained the required velocity can be noted and this should be maintained in the future operation of the dryer. It is by such simple measurements that the best efficiency of a dryer is obtained.

The distribution of the air currents in the dryer may likewise be studied by means of the anemometer and we are thus enabled to place the curtains in the most advantageous positions.

Other instruments might be employed in addition such as the atmometer, for determining the humidity by means of the drying capacity of the air. One of these instruments consists simply of a counterbalanced shallow metal pan attached to a scale. The pan is filled with water until it indicates a certain weight on a dial. It is then placed in position in the tunnel, the time being noted. After an hour or two hours the weight indicated by the balance is again read and the loss in the weight of water observed. The greater the drying capacity of the air the more water will be evaporated from the pan. Saturated air will not cause any loss of weight. This instrument though interesting and useful is not a necessity, the wet and dry thermometer and the anemometer being sufficient.

The regulation of the kiln conditions embraces the measurement of the temperature, draft and composition of the fire gases. The kiln temperature as we know may be determined by means of the thermometer, the Seger cones, placed in the bottom and top of the kiln or the Le Chatelier pyrometer. These devices have been so frequently described that their discussion seems unnecessary.

During the water smoking period the temperature of the kiln is measured by means of the thermometer which is best incased in an iron pipe packed with asbestos. At no time during the water smoking should the temperature exceed 200°C and, if the ware has not been set perfectly dry, the

kiln should be held at 150°. The expulsion of all of the mechanical water of the clay is indicated by inserting a cold iron rod into the flue and observing whether any moisture is deposited upon the iron.

Attention is called only to the manner of reading the temperature from the milli-volt meter. It must be remembered that the thermo-couple measures only the difference between the temperature of the connection between the platinum and copper wires and the temperature at the end of the couple in the kiln and hence it is necessary to make allowance for the temperature at the spot where the copper joins the platinum wires. It is therefore advisable to keep a thermometer at this place. The temperature at the copper junction is then added to the registered temperature. It goes without saying that in this case the instrument should indicate zero when the switch is thrown out. For accurate work the ends of the platinum wires are immersed in ice water. In this case no correction is necessary.

Where the time honored method of measuring the settle is employed for determining the finishing point of the burn and the work is done carefully it is possible to produce good and uniform burns. The pyrometer lessens the work and anxiety of the burner and hence is certainly of value. It is especially helpful in enabling the burner to control the oxidation stage of the firing which is very important for clays high in carbon. Draw trials when properly used likewise are very helpful though they often deceive the unwary. If the porosity of the well burnt product is known the determination of the water absorbed by a trial is very useful, it being only necessary to weigh the piece when cool soaking it in water for several hours and then weighing it again. The per cent of water absorbed as compared with the absorption of the well burnt ware, in the same time, gives a useful test in regard to judging how near the burn is finished. It is evident that the draw trials must be cut out of the bar coming from the machine and must not be hand made.

By draft we mean the velocity of the gases escaping through the stack. They are caused to flow up through the stack by virtue of the difference in temperature between the inside of the stack and the outside air. Since cold air is heavier than hot air the former exerts an upward pressure in the stack causing the gases to assume a certain velocity. To illustrate: If the outside air has a temperature of 0°C and the mean stack temperature is 273°C, the pressure caused in a stack 3 feet square on the inside and 30 feet high is 14.2 pounds. The draft of a stack varies as the square root of the height. If therefore we call the strength of the draft one when the stack is 20 feet high, the draft is 1.4 when the height is 40', 1.73 when the height is 60', 2 for 80' and 3 for 180 feet. We see hence that after a certain height is reached a further increase does not produce much more draft.

Similarly the greatest draft is produced when the mean stack temperature is greater by 273°C than the temperature of the outside air. It does not do any good to get the stack hotter.

The instrument called the draft gauge indirectly measures the velocity of the gases travelling up the stack and while we value the readings as indicating the strength of the draft we care but little to know the actual velocity. All we care to know is that we are not maintaining an excessive draft which causes too much air to rush into the kiln. In other words we want to determine the proper draft of a kiln and maintain it by letting down the damper as soon as the velocity of the gases becomes too great. The letting down of the damper should begin before the mean temperature of the stack has reached 300°C. It is evident that where the stack has only about sufficient draft the use of the damper is unnecessary.

The simplest draft gauge possible is made by bending a glass tube into U shape and filling it partly with water. By connecting one of the open ends to the stack, the atmospheric pressure will push up the column of water on one side. This rise of the column we call the available head of the stack in terms of water. Nearly all draft gauges are modifications of this simple apparatus, the differences being simple due to devices for making the readings more sensitive. This is done by adjusting one limb so that it makes an angle which magnifies the reading as compared with the straight, vertical tube. Another way is to enlarge the tubes on top and using two liquids, one a colored solution of carbolic in water, the other simply a concentrated carbolic acid solution. Illustrating the use of the gauge let us assume that the best draft was found to be five divisions of the gauge. If the gauge should indicate six divisions it is hence best to damper the kiln down to the 5 mark again. The gauge is useful also in finding out whether the kiln has uniform draft all around by simply inserting the instrument through one of the peep holes, closing up the opening and making a reading. If the kiln has a stronger draft on one side this is readily shown by the difference in the readings.

But now the question may be asked: How are we to know when we have the best draft conditions? This brings us to the next question, the composition of the fire gases.

The principal gases coming out of a stack are carbonic acid, oxygen, nitrogen and steam. If the coal were burned perfectly no oxygen would be found in the gases but this is neither desirable nor possible. On the other hand a large excess of oxygen indicates a large amount of air which has gone through the kiln robbed it of its heat and carrying it out through the stack. Hence we must find some compromise. First of all, during the oxidation stage of a clay fairly high in carbon we should not begrudge the kiln the excess air it gets. In fact all we need to do during this period of burning is to keep the temperature approximately around 700°C and admitting all the air we can. This is kept up till a trial drawn out shows the absence of the carbon spot, that is, the dark area caused by the presence of carbonaceous matter which gradually becomes smaller and smaller. No burner should omit this extremely important and simple test. As soon as no evidence of carbon is left we must begin to economize and to stop the admission of the large quantities of air. For this purpose we can analyze the flue gases for carbonic acid and oxygen. This is done in a very simple way by means of the so called Orsat apparatus, which any one can learn to manipulate in a short time. This instrument determines the volume of carbonic acid gas and oxygen in per cent. By means of a simple calculation we can now figure the amount of air which we have admitted to the kiln, which is carried out as follows:  $(100 + 100 - 4.76\% \text{ oxygen}) \times 100$ . Illustrating by an example we assume that 6% of oxygen were found in the gases. Carrying out the calculation we obtain  $(100 + 100 - 4.76 \times 6) \times 100 = 140\%$ , nearly. In other words we have admitted to the kiln 140% of air. This is not a bad condition, as it simply means that we have an excess of 40% of air. In this sort of calculation, 100% of air stands for perfect combustion, anything above 100% means excess air. Now after the period of oxidation is passed we should aim not to exceed 130% of air as this represents about the best we can do in our kilns. On the other hand unless we wish to produce black colored or flashed ware we should not allow the air to fall below 100%. It is now that we can fix the proper reading of the draft gauge. If the air content does not exceed at least not to any considerable extent the amount of 130% after the fires are burning briskly we have about the right amount of draft and we adopt that reading of the gauge as the proper one for the future. We can now put the gas apparatus away. If the per cent of air continues to run too high we must drop the damper until the proper

amount of air is admitted and we again note the draft registered by the gauge. This applies, of course, only to the kiln on which the test was made. In this way we can standardize and fix the proper draft for each kiln, further tests with the Orsat apparatus being unnecessary.

There are on the market devices for analyzing gases which are even simpler than the Orsat apparatus. One of them is the Cramer-Baur burette by means of which we determine only the carbonic acid gas, but can do this in a few minutes. Since most bituminous coal evolves on perfect combustion about 18% of carbonic acid gas we can tell how close we come to the most desirable conditions by simply finding the per cent of this gas in the flue gas. We should try to maintain around 13% of carbonic acid. However where coke is used for fuel the theoretical volume of carbonic acid gas is 21% and in this case the desirable percentage is about 16%. Where gas firing is employed the conditions can approach very close to the perfect proportions and we should expect to find but small amounts of oxygen in this case, not over 10—15%. This constitutes one of the advantages of gas over coal-firing.

Prof. Bleining: I have indicated what you could do to help your work and get out a larger per cent of well burned ware. All of you what want to know more about it can, of course, learn more about it by applying to the Ceramic Department of the University of Illinois. That is what the Department is for. Let any Clay Worker apply and he will be given a prompt reply, and if the information cannot be given, he will be told so. I thank you gentlemen. (Applause.)

A vote of thanks was extended to Professor Bleining.

Mr. Mamer: There is one point I want to ask the Professor about. It is in regard to that simple device for testing the carbonic acid gas.

As I understand, you take this tube, and insert it into the flue leading into the stack, compress your rubber bulb and then release it and in that way draw the gas into the bulb.

Prof. Bleining: The apparatus consists of a large burette, or tube, into which the gas is drawn and after the sample is collected a caustic potash solution is admitted and the instrument shaken. By absorbing the carbonic acid, the decrease in volume will indicate the amount of this gas.

President Pratt: I was over to Champaign with the Professor and some of the other members of the Faculty in the Ceramic School last week. There is a whole lot there to get. I know that he did nicely for us, and there was no end to the questions that we could ask and that he could answer satisfactorily.

President Pratt: We will now take up the paper "Clay vs. Cement Tile" by F. W. Fitzpatrick, Consulting Architect and Executive Officer of the Inter-National Society of State and Municipal Building Commissioners and Inspectors of Washington, D. C.

This paper and Mr. Fitzpatrick's letter was read by Mr. Joannis, and will appear in a later issue of the Clay Record.

President Pratt: We certainly appreciate Mr. Blair's willingness in the matter to help us along. Our pathway is getting easier all the time and we appreciate it. Before a motion to adjourn is made, I wish to announce the appointment of the Committees.

For the Committee on Resolutions I appoint Harry de Joannis, Chairman, Albert E. Giles and Fred Titterington.

For the Committee on Nomination, I appoint L. Solfisburg, Chairman, D. C. Haeger and N. W. Gates.

An adjournment was then taken to Thursday, January 16th, at 9:30.

Next session will appear in next issue.



## CLAY RECORD.

PUBLISHED SEMI-MONTHLY BY THE

CLAY RECORD PUBLISHING COMPANY,

Ninth Floor, Plymouth Building,

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GEORGE H. HARTWELL, EDITOR

## SUBSCRIPTIONS

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Vol. XXXII. FEBRUARY 14, 1908. No. 3

"I like to read American advertisements. They are to themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

Why do people who pick quarrels always select such ugly ones?

Subscribe for the Clay Record today. Tomorrow never comes to us—we want to eat, too.

The man who knows enough to attend to his own business knows about all that is worth knowing.

Of course you are entitled to think what you please, but it isn't always safe to inflict your thoughts on others.

The returns indicate that the total output of Portland cement in the United States during the calendar year 1907 was approximately 48,000,000 barrels. This should be compared with an output of 46,463,424 barrels in 1906, and of 35,246,812 barrels in 1905.

In this issue of the Clay Record is the third session of the Illinois Clay Manufacturers association. It contains several articles that are of exceptional value to every clay manufacturer. They are all master pieces. Read every word of them. The fourth and last session will be printed in full in the next issue.

A Chicago company started to replace its old plant with a new structure of reinforced concrete to cost about \$400,000. But when the building was half done the experiment already had cost \$400,000. It would have cost just as much to abandon the structure as to complete it, so they went ahead and sunk a total of \$800,000. The company now is in the hands of a receiver.

## BUILDING OPERATIONS FOR JANUARY

Influenced by national financial disturbance, the most sensitive of all industrial undertakings, building and construction, has suffered a severe depression, as shown by official reports received by the American Contractor, Chicago, and tabulated. As forecasted by the decline of stocks of every variety, the decrease in building operations as compared with January, 1907, was expected, and has materialized, to the extent of 44 per cent in the aggregate of 47 cities presented in the comparison. The indications for February are more favorable and a large volume of building may be expected as the season approaches, subject only to such restrictions as are presented each presidential year.

Among the cities which scored an increase despite of the financial panic are: Bridgeport, with a gain of 22 per cent; Denver, 9; Kansas City, 16; Little Rock, 6; Omaha, 10; Paterson, 28; Reading, 32; Spokane, 10; Topeka, 91; Greater New York shows a decrease of \$7,000,000, a loss of 50 per cent; Philadelphia, 61; Chicago, 21; St. Louis, 51.

## WILL A PERPETUAL CONTRACT HOLD

Whether or not a perpetual contract entered into by a railroad company for the hauling of freight when a specified rate is given is contrary to public policy when it is less than the lawful rate and the rate being charged other shippers, is a question at law that arose yesterday in the case of the Dawson Brick & Tile company, Springfield, Ill., against the Chicago, Peoria & St. Louis Railroad company, and one which Judge Creighton will decide.

The suit is brought to test a contract between the Dawson Brick & Tile company and the Chicago, Peoria & St. Louis Railroad company, made in 1893, whereby the railroad company agreed for all future time to switch cars for the brick company for \$2 per car, for which they were granted the right of way through the company's lands at Dawson.

At that time, that was the rate approved by the railroad and warehouse commission. Since that time a rate of ten cents per ton has been approved by the commission. The railroad company is now charging the Dawson Brick & Tile company at the rate of ten cents per ton, when they contend they should only be charged at the rate of \$2 per car, as per original contract. The railroad company contends that the contract is void, and that they at no time had the power to make any contract that would give the shipper any advantage over another.

The actual money involved in the suit on hearing is no large amount, but there are a number of contracts at the present time throughout the state that will be affected by the ruling of the court. Judge Creighton has taken the matter under advisement and will render a decision at a later date.

## OBITUARY

Ernest Ehman, one of the early brick manufacturers of Evansville, Ind., is dead at the age of seventy-five years. He was a native of Germany and spent most of his life in Evansville.

Christian F. Brockmann, president and general manager of the Brockmann Pottery Co., 1266 Richmond St., Cincinnati, Ohio, died at his home of heart failure. He has been ailing for several years with a complication of diseases. He was a Mason and a Shriner.

## ACCIDENTS, DAMAGES AND FIRES

The factory building at the brick yard of H. Bullock, Jackson, Tenn., was completely destroyed by fire.

The Rochester (N. Y.) City Pottery, owned by Harry T. Donovan and B. A. Glidden, has made a voluntary petition in bankruptcy.

Addison Thompson, principle stockholder of the Fairfield Pot & Clay Co., Lancaster, Pa., has been appointed the receiver for same.

The main factory building of the Goodwin Brothers Pottery Co., at Elmwood, Ct., was burned, causing a loss of \$25,000, partly insured.

Louis J. H. Brinkman and Benjamin Brinkman settled with the Cambridge Tile Mfg. Co., Covington, Ky., for \$500 damages each, for personal injuries received while at work for the company.

The Summitville, Ind., factory of the National Drain Tile Co., was completely destroyed by fire, causing a large loss and throwing 200 men out of employment. It was a total loss as it was not covered by insurance.

The \$10,000 damage suit of Mrs. Emile Streicher against the Davenport (Ia.) Brick & Tile Co. is now in progress. Her husband was killed in April while shoveling clay into a car and while so engaged was hurt so that he died.

One man was killed and three others seriously injured by an explosion of a boiler at the plant of the Welch Brick company at Monaca, Pa. The explosion was caused by cold water being permitted to run into an overheated boiler.

## THE WEATHERING OF COAL

Bulletin No. 17 of the Engineering Experiment Station of the University of Illinois, "The Weathering of Coal," by S. W. Parr and N. D. Hamilton, has just been issued.

The bulletin relates to the weathering of coal and losses in fuel values which accompany storage under various conditions. The information heretofore available concerning the behavior of coal in storage is exceedingly meagre. The results of tests, as outlined in this bulletin, add materially to our information and open a way for a better understanding of matters pertaining to weathering, spontaneous combustion, and other difficulties which attend the storage of coal in large masses. Deterioration has been studied with samples maintained in the open air, under cover at varying temperatures, in air tight containers, and in the submerged conditions.

## RATES ON BRICK WILL REMAIN UNCHANGED

Neither the transportation rates on brick nor those on sand will be altered for the present and possibly for the year, and perhaps for a longer period in the territory of the Central Freight association, of which the Pittsburg, Pa., district comprises a very considerable portion. Such is the information obtained from Pittsburg freight officials attending the meeting which was recently held in Chicago, by the brick and sand committee of the Central association. While the expression of the committee is technically only a recommendation to the association, it is considered as good as a final action on the part of the latter body.

The outcome of the meeting has been watched with the greatest possible interest by paying brick manufacturers, on whose account the session was really called by the association committee. On July 18 last the Central Freight association met in New York and decided to increase the paying brick rates from Chicago to New York, eastbound, from 20 cents to 25 cents per 100 pounds, and to all eastbound points proportionately. At still another meeting of the freight association, August 1 last, at Chicago, the rate was modified to 22½ cents per 100 pounds, the shippers being notified that this tariff would go into effect September 15. The manufacturers obtained an injunction against all the railroads in the Pittsburg district from the circuit court of Western Pennsylvania, the same holding good until January 1, 1908. The shippers then combined and presented a bill of complaint to the interstate commission, setting forth the action of the railroads in elevating the freight tariffs.

Because of the fact that the commission is now investigating the matter of rates on brick, the brick committee of the Central Freight association decided to "lay low" at the meeting in Chicago and await results, meanwhile keeping the transportation prices the same as they have been. No disposition was manifested on the part of the association to lower the rates.

The brick and sand committee recommended also that no raise be made in the rates on sand, as the present business conditions do not justify such a course of action. Pittsburg financial interests are wound up considerably with both the brick and sand industries. It is stated that about \$15,000,000 is invested in the paying brick business in the United States, of which the greater part is transacted in the territory of the Central Freight association.

A regular meeting of the joint committee of freight organizations of the railroads in the "iron belt," including Youngstown, Pittsburg, Buffalo, Zanesville, Marietta and other towns of this neighborhood, was held Feb. 7th, in Youngstown. Local officials present declared that the meeting was only of a routine character, that no change in rates was contemplated and that the principle discussion was had concerning improved methods of handling shipments and a more sympathetic arrangement among the carriers.

## CHANGE IN NEW YORK DISTRICT OFFICE

The C. W. Raymond Company of Dayton, Ohio, have placed Mr. H. G. Layng of New York, in charge of that District Office, superseding Mr. A. E. Davidson, who has been identified with them for a number of years.

Mr. Layng has for the past ten years been a purchaser for large western interests and as a consulting engineer built numerous plants, some of them being the largest brick plants on the Pacific coast.

The location of the office, Room 40, 39-41 Cortlandt St., will be maintained for the present.

## CLAY RECORD.

## BERG &amp; SONS BUY LARGE MANUFACTURING PLANT

A. Berg & Sons have purchased the large factory, formerly known as the Canadian Ship Bldg. Co., situated on the corner of Bathurst and Niagara Sts., Toronto, Ontario. It is one of the largest and best situated factories in Canada.



ANTON BERG,  
INVENTOR OF BERG PRESS

The plant consists of, machine shop, foundry, patternshop, smith shop, and boiler shop, with railway sidings through the buildings and yard.



JOHN BERG,  
ASST. MANAGER THE BERG CO.

A. Berg & Sons are affiliated with some of the wealthiest and best business men in Canada, and have organized their company for one-quarter million dollars. They are fully equipped and ready to manufacture all brick machinery and equipment of the highest grade, also steam engines, boilers, gas and gas-line engines, and gas producers.

A. Berg & Sons have several inventions and patents which will be developed by the new company at an early date. Their purpose is to build all this machinery to the highest perfection.

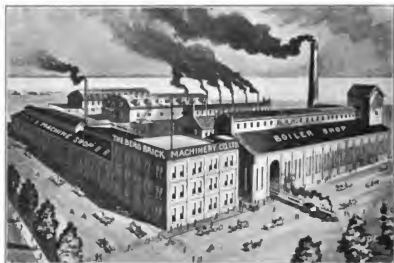
Mr. A. Berg has had about 20 years experience with the highest grade of brick machinery, and is a mechanical engineer of high standing, of Norwegian birth and mechanical training, and about 52 years of age.

Mr. John Berg, the oldest son, has always been a valuable assistant to his father and is a person of high mechanical ingenuity, and about 25 years of age.

Severin Berg, the junior member of the firm, has learned his trade as a machinist and mechanical engineer and is about 23 years of age.

Mr. Berg is the patent owner and inventor of the celebrated "Berg" press, which is considered to be one of the best on the market. In the last three years they have been manufacturing these presses with all equipment, and have sold and installed 21 with equipment in Canada; the capacities ranging from 20 to 60,000 in a day of ten hours; and, all are a success and honor to their name.

The new company will be styled "The Berg Brick Machinery Co., Ltd." They took charge of the premises on the 20th of January, and have since ordered considerable stock, expecting to employ from 200 to 300 men in the near



CANADIAN HOME OF THE BERG PRESS

future; although, when the plant is working to its capacity, it will employ about 500, which, of course, is not expected for a couple of years.

In the past A. Berg & Sons have had their machinery manufactured partly in the plant they now occupy and partly in the John Inglis Co., Ltd., while their office has always been located in Manning Chambers. After the 1st of March they will transact all business at their commodious office building at the works, Niagara and Bathurst Sts., Toronto.

The Berg Brick Machinery Co., Ltd., contemplate and are negotiating to manufacture mining machinery, which of course, will work fairly well with brick machinery, engines, and boilers.

It is well known, that the money stringency has been effective to Canada, unfortunate for some but fortunate for others, for the Bergs got a big snap, and it is said to be well deserved, for they have always done their best to produce the highest grade of machine, and have tried to satisfy all customers.

This purchase has been premeditated, while A. Berg & Sons have been economical striving to attain this end, and all with whom they have done business wish them every possible success which they so well deserve in their venture.

## ANNUAL STATEMENT OF ILLINOIS BRICK COMPANY

The annual meeting of the Illinois Brick company has been held.

The company did not enjoy a good year, which ended on Dec. 31, 1907. The net earnings were \$105,394, but dividends declared reduced the surplus below that shown by the previous year. Comparative figures follow.

## ASSETS.

	Dec. 31, '07.	Dec. 31, '06.	Dec. 31, '05.
Plants .....	\$3,616,269	\$3,619,716	\$3,635,516
Accounts receivable .....	133,004	390,021	370,778
Inventories .....	439,000	290,945	377,814
Cash and bills receivable ..	82,626	93,895	46,788
Totals .....	\$4,270,902	\$4,398,487	\$4,430,896

## LIABILITIES.

	\$4,000,000	\$4,000,000	\$4,000,000
Capital stock .....			
Accts. payable .....	54,661	127,642	114,039
Dividends unpaid .....	40,000	40,000	60,000
Surplus .....	176,239	230,845	256,857
Totals .....	\$4,270,902	\$4,398,487	\$4,430,896

In his statement to the shareholders President C. D. B. Howell said:

"The rebuilding of the plant destroyed by fire in October entailing a loss of \$35,000 and the lack of business and low prices for November and December, brought about the result above indicated (\$105,394). Although the result of the year's work is far from satisfactory, we wish to assure our stockholders that the plants as a whole are in better condition than ever and that our efforts to keep the costs at the proper point have been realized."

The following officers and directors were elected in the course of the day:

President, C. D. B. Howell; vice-president, C. B. Ver Nooy; treasurer, J. H. Gray; secretary, William Schlake. Directors—D. R. Forgan, E. C. Potter, S. W. Lamson, M. A. Farr, George C. Prussing, C. D. B. Howell, J. H. Gray, C. B. Ver Nooy, William Schlake.

## LUCE COMPANY HAS NEW MOTTO

*Mr. Geo. Hartwell, Chicago, Ill.*

DEAR FRIEND HARTWELL: Will ask you to publish the information that the prize of \$20 for the motto, which we mentioned in your December issue, has been awarded to one John H. Woods of No. 2048 Carroll St., St. Paul, Minn.

We had a hundred or more mottoes and suggestions submitted, and we wish to thank the readers of your clay journal for having responded so promptly.

The motto as adopted is from Antoine Arnauld and reads as follows:

"Perfection consists not in doing extraordinary things, but in doing ordinary things extraordinarily well."

We have had this motto lithographed in white on a blue back ground, mounted on pressed board, and covered with a special process, which makes it moist proof and suitable for hanging in all sorts of brick yard offices.

We will be glad to send this motto to any parties writing us, sending us their names and proper street address.

Thanking you for the courtesy you have extended us through the columns of your journal, we beg to remain,

Yours very truly,

LUCE ENGINEERING CO.,  
Porter B. Gibson, Secretary.

St. Louis, Mo., Feb. 12, 1908.

## STREATOR CLAY MANUFACTURING CO. SELLS PLANT

James L. Daugherty and R. D. Scott, principal owners in the Streator (Ills.), Clay Manufacturing Company's plant, have disposed of their interests to Robert H. Green of St. Paul and James A. Green of Chicago, these gentlemen taking possession February 1st.

Messrs. Green are members of the firm of Green & Sons Co., whose headquarters are at Appleton, Wis., the company being general contractors for sewer construction, railway work, etc., in numerous states. At present they have the contract for the big west side sewer in Ottawa, where careless workmen were responsible for an explosion by dynamite a few weeks ago which wrecked many homes. The firm can in no measure be charged with the carelessness, but it will nevertheless be compelled to meet the expense of repairing the dwellings. Immediately following the explosion Messrs. Green set men at work to repair the damage, and promise to settle all bills without going into court. This statement is given merely to show the financial responsibility of the firm which has now cast its lot in Streator.

Stockholders in the new company have elected Robert H. Green as president and general manager, he succeeding to the position formerly held by Mr. James L. Daugherty. James L. Green has been chosen as vice-president, and John A. Conley of Chicago as secretary, the last named gentleman succeeding Robert D. Scott. Mr. Conley had previously held a large bulk of stock in the corporation.

Messrs. Daugherty and Scott do not intend to retire, but will resume business somewhere, the exact place will be decided later.

## TEXAS BRICK MANUFACTURERS MEET

The Texas Brick Manufacturers' Association which convened at Corsicana, Texas, held its sessions in the Elks Hall, Jan. 14th. There were about twenty-five delegates in attendance, representing nearly every section of the state.

The following program was discussed:

Morning Session.—President's annual address, C. R. Sherrill, Corsicana.

Troubles of a Brick Manufacturer, C. A. Benton, Corsicana; O. H. Cross, Waco.

Our Pleasures as Manufacturers, What Are They? Wm. Weatherford, Ferris; Walter Sneed, Austin.

How Can we Improve Our Product? A. L. Branson, Marlin.

Best Method of Selling, M. W. Staniforth, Gainesville.

Afternoon Session.—Should We Help One Another, If So, Why? Rube Harry, Dallas.

Should a Brick Plant Ever be Run at Night? W. J. Green, Ferris.

1908—Outlook, Kal Shwartz, Corsicana.

How Much Should be Added per 100 for Wear, Tear and Maintenance of Plant in Order to Arrive at Cost? Walter Bennett, Millsap.

At the conclusion of these discussions the following officers were elected for the year:

C. R. Sherrill, president, Corsicana; M. W. Staniforth, Gainesville, vice-president; Walter Sneed, Austin, vice-president; J. M. Harry, Dallas, secretary and treasurer.

### ANOTHER DRY PRESS PLANT FOR TEXAS

Carrollton, Texas, will have the model and most modern dry press brick plant of the country when the plans of the Dallas Press Brick & Tile Company have been carried out. The company has let the contract with the American Clay Machinery Company of Bucyrus, Ohio, for the entire equipment of the plant, which will include two of the most modern presses built and the clay preparing machinery necessary, together with special conveyor system for handling the raw material to the presses.

Another special feature will be conveying apparatus for transferring the brick from the presses into a modern continuous kiln.

### SUPERINTENDENTS AND FOREMEN IN POTTERIES HAVE FORMED ASSOCIATION

In the formation of an association composed of superintendents or foremen of the potteries of the Ohio Valley district, at East Liverpool, a proposition has been launched which will prove, it is said, to be of considerable benefit to the trade. Something of this sort has been long needed in the western pottery district, and while many connected with the pottery trade are affiliated with the American Ceramic Society, yet that is not just what has been desired from a potter's standpoint.

Although founded for the purpose of "education and protection," it is for the former and not the latter that the object of the association is given. It is planned to have technical addresses delivered before the association, either monthly or fortnightly and then discussions following. If the superintendent or foreman discovers something that would be helpful to another, this fact is told of at a meeting and perhaps the idea of discovery can be improved upon after all have talked the matter over. The officers of the association are: President, John Stamm, National China Co.; vice-president, Robert J. Meakin, Hall China Co.; secretary, Joseph F. Manor, treasurer, Silas M. Ferguson, United States Pottery Co., Wellsville, O. Meetings will likely be held with marked regularity in the rooms of the Potters' club, in the Harker building.

### BRICK COMPANY WILL LIGHT ROSEVILLE

The annual meeting of the Devonshire Brick and Ceramic company was held in the office of the company in the Columbus Savings and Trust building at Columbus, O. The following board of directors was elected: F. D. Dildine and J. D. King, Casual Winchester; George J. Karb, Fred Guthery, Marion; R. C. Wilkin, L. C. Hugentugler, Warren B. Ferris and W. A. Shoemaker. The board organized by the election of Warren B. Ferris, president; George J. Karb, vice-president; W. A. Shoemaker, secretary and general manager; R. C. Wilkin, treasurer.

The report for the year showed a nice surplus in the treasury. No dividend was declared, but the money in the treasury will be used to build an electric light plant at Roseville, where the brick plant is located. The electrical plant will cost about \$50,000 and will be designed to light the town. An ordinance is now pending in the city council.

### WOODS GIVEN SIXTEEN YEARS' ADDITIONAL SERVICE BY PRESERVATIVE TREATMENT

Fence posts of many kinds of cheap woods which ordinarily would soon decay if set in the ground can be made to last for twenty years by a simple treatment with creosote. Most of the so-called "inferior" woods are well adapted to the treatment, and this is especially true of cottonwood, aspen, willow, sycamore, low-grade pines, and some of the gums. When properly treated, these woods outlast untreated cedar and oak, which are becoming too scarce and too much in demand for other uses to allow of their meeting the demand for fence posts.

Impregnation with creosote has been greatly cheapened by the introduction of the "open tank," which can be installed at a cost of from \$30 to \$45, or much less if an old boiler is used. A tank with a bottom 12 square feet in area will suffice for treating 40 to 50 6-inch posts a day, or double this number when two runs per day can be made. The absorption of creosote per post is about as follows: Eucalyptus, one-tenth gallon; willow, two-tenths gallon; sassafras, ash, hickory, red oak, water oak, elm and maple four-tenths gallon; Douglas fir, quaking aspen, and black walnut, six-tenths gallon; sycamore, cottonwood, and lodgepole pine, seven-tenths gallon. The price of creosote is about 10 cents per gallon in the east and middle west, 16 cents per gallon on the Pacific coast, and 27 cents per gallon in the Rocky mountain states. The cost of treating a post will therefore vary from 4 to 15 cents. Properly treated, it should give service for at least twenty years.

Experiments of the Forest Service show that with preservative treatment the durability of lodgepole pine in Idaho is increased sixteen years. The cost of creosote is there relatively high, yet by treating posts there is a saving, with interest at 6 per cent, of 2 cents per post yearly. More important than the saving, however, is the fact that through preservative treatment other woods are fitted to take the place of cedar, of which the supply is rapidly becoming exhausted. A detailed description of experiments in preserving fence posts, together with practical suggestions for treating them on a commercial scale, are contained in Circular 117 of the Forest Service. This publication can be obtained upon application to the Forester at Washington.

### SHIP TILE TO PANAMA

In the past three weeks the Pittsburg (Kansas) Sewer Pipe & Conduit company has shipped fourteen cars of tile to the United States government at Colon to be used for drainage purposes on the Panama canal.

The first shipment were two, which were shipped January 8, and at various times since then shipment from one to three cars have been traveling to the Isthmus to be used by the government in draining the country and placing it in a sanitary condition.

Another car shipped went out later over the Kansas City Southern road to Port Arthur, Texas, from where it will be shipped by a seagoing vessel to the Isthmus and transported into the Isthmus country and placed in use. The size of this drain tile is 4, 6 and 10 inch pipe and is plenty large enough to suit all purposes.

**KWANTUNG BRICK FACTORIES**

Consul Roger S. Greene, of Dalny, reports that the manufacture of bricks is one of the principal industries of the Kwantung leased territory, and owing to the scarcity of lumber in that region it is likely to continue to be of importance. The consul continues:

At present old-style methods of forming the bricks and baking them prevail, with the result that at times like the present when the demand is great and quick work is required, an inferior product is turned out, especially as much of the clay used is of poor quality. Machinery is not in use at any of the factories, though a few old out-of-repair machines are left from the Russian times. In only one are there really modern kilns operated. Primitive Chinese kilns are mostly used, though there are also a few of a Japanese style called "Nobori," in which there is a series of connected chambers, each a little higher than the one preceding.

There are now 15 brickyards in and near Dalny, 10 operated by Japanese and 5 by Chinese. It is difficult to state their exact capacities, but they vary from roughly 30,000 to 1,200,000 bricks per month. Their total output is estimated roughly at 40,000,000 bricks per annum. These factories work only from six to eight months in the year, closing in the winter on account of the cold, which makes it impossible to work up the clay. At Port Arthur there are eight brick yards, one of which is worked by the provincial prison, and three others are leased by private individuals from the government. The industry there is on a smaller scale than at Dalny, the total yearly output being probably not more than 4,000,000 bricks, and there is probably comparatively little chance of its being greatly extended in the near future.

At Kinchow, the third center in this district, there are ten brick yards, all operated by Chinese, and all small, their yearly output varying from 20,000 to 60,000.

With all this activity there seems to be an opportunity for the introduction of modern brick-making machinery in Kwantung Province, more especially in the neighborhood of Dalny, among the more enterprising and up-to-date Japanese manufacturers. One lessee has informed me that he hopes to buy such machinery in the near future, and there are likely to be other similar opportunities. Should any American manufacturers wish to take up this matter a list of the factories forwarded may prove of some value. There is one foreign (Anglo-American) firm here dealing in machinery on a considerable scale. [All the names referred to, as well as the leading Japanese importers of Dalny, are registered at the bureau of manufacturers.]

**BARRON DRYER REMOVES OFFICE TO WORKS**

The Barron Dryer Co., has removed its offices from 84 LaSalle St., to 18 Sloan St., Chicago, in order to consolidate the offices with their recently enlarged manufacturing plant.

Thirty years of experience in the manufacture and installation of Dry Houses and equipment have determined rules of construction and economy which is the foundation of the success of the Chicago Iron Clad and Barron's Tender Clay Dryers and their increased use has necessitated greater manufacturing facilities particularly of Cars, Decks, Turntables, Track and Steam fittings.

The products—reputation and world wide experience of the Barron Dryer Co., commands consideration and attention.

**SAND OR LIME BRICK OR BLOCK NEWS**

The Hydraulic White Brick Co., of Wilmington, N. C., filed a certificate of dissolution with the secretary of state.

Hagen & Stahl have opened up a cement brick works at Las Cruces, New Mexico, and are now making cement brick.

Martin Peterson has bought a one-half interest in the cement tile works at Guthrie Center, Ia., and expects to enlarge the business.

The Chicago Sand Brick Co., of Oklahoma City, Okla., has been organized with a \$50,000 capital stock, by L. W. Tatum and others.

The sand-lime brick plant at South Amboy, N. J., has again changed hands, and the machinery is being removed to be replaced by new.

The Universal Cement Brick & Block Co., New York City, show liabilities of \$72,154 and assets \$44,869. Their accounts amount to \$308.

The Besser Manufacturing Co., Alpena, Mich., has sold two of its cement tile making machines to the Federal government to be used in Montana.

A sand and cement brick company owning plants in the east are figuring with the Chamber of Commerce at El Paso, Texas, with a view of locating there.

A. M. Wagner, Webb City, Mo., will build in Kansas City, a tailings and cement brick plant which he expects to operate in connection with his plant in Webb City.

The work of installing \$5,000 worth of additional machinery at the Sioux Falls (S. Dak.) Pressed Brick Co.'s works is being carried on, so the plant can start up soon with more than double its old capacity.

The Sand Lime Brick Co., Camden, N. J., has been incorporated with \$100,000 capital stock. Incorporators are F. R. Handel, J. A. MacPeak, and W. F. Eidell.

The first annual meeting of the Luverne (Minn.) Pressed Brick Co., was recently held with the following results: E. A. Brown, president; S. B. Nelson, vice-president; W. E. E. Grenc, secretary and manager, and A. D. DaDue, treasurer.

At the annual meeting of the Denbigh (N. Dak.) Brick Co., Joseph Roach was elected president, J. A. Pendroy, vice-president and treasurer, and O. B. Jacobson, secretary and general manager, to succeed Jacob Ohmart. The company plans to enlarge the plant.

Colby M. Avery, who has spent many years in the mechanical work erecting rock crushing plants, and designing sand-lime and slag-lime brick plants has changed his location and is now at Aurora, Illinois, and will serve clients in the capacity of a consulting engineer.

**BALTIMORE HEALTH COMMISSIONER WILL ALLOW THE USE OF CLAY SEWER PIPE**

After investigation Health Commissioner Bosley, Baltimore, Md., has agreed to allow the use of terra cotta pipes for connecting buildings and the sanitary sewers to within a distance of 20 feet of the building line. By the adoption of this plan Dr. Bosley believes it will be perfectly sanitary.

In making connections the Sewerage Commission is desirous of using terra cotta pipe within five feet of the building line and then using cast iron pipe. The health officials advocated the use of iron pipe from the building to the sewer laterals.

## MISCELLANEOUS ITEMS

J. Roby, who bought land at Shelby, Mo., last year, has his machinery shipped and putting same in plant to make brick and tile.

The National Drain Tile Co., Terra Haute, Ind., just landed a contract to tile 5,000 acres of land in Coles county, Ill., consideration \$8,300.

The Commercial Club, Ocala, Fla., has appointed a committee to draw up a contract for the establishment of a brick and tile factory there.

The transfer of the property of the Perth Amboy (N. J.) Terra Cotta Co., to the Atlantic Terra Cotta works at Totterville, L. I., N. Y., has been recorded.

The Lehigh Clay Manufacturing Co. has been organized at Augusta, Me., with \$400,000 capital stock. President is L. A. Ingalls and treasurer, A. M. Currier.

The Morris County Brick Co., Whippany, N. J., has been incorporated with \$200,000 capital stock. Incorporators are Arthur Haslam, Arthur Paulmier and John Monteith.

The Gadsden (Ala.) Brick Co. has discovered clay deposits near Gadsden which will make vitrified brick and a down draft kiln is being erected in which to burn them.

John P. Wilcox, Cadillac, Mich., has organized the Cadillac Brick Co. and will build a brick making plant in the southeastern part of the city, where a fine deposit of clay has been found.

At the annual meeting of the Rensselaer (N. Y.) Brick Co. A. H. Ostrander was elected president, Homer Brayton, vice president; James Henderson, secretary, and R. H. Rollins, treasurer.

The Michigan Paving Brick Co., Saginaw, Mich., at its annual meeting decided to increase the capacity of the plant to a large extent. The year 1907 was very successful. Old officers were re-elected.

Brush Brothers, Buffalo, N. Y., has been incorporated with \$100,000 capital stock. Incorporators are Wm. H. Brush, Warren H. Brush and Stephen C. Brush. Their plant is in East Buffalo.

At a recent reorganization of the C. M. Miller Mining and Manufacturing Co., Terra Haute, Ind., the name was changed to the Wabash Brick Co., Mr. Miller selling his stock to W. H. Albrecht, Jr. H. M. Spang is secretary and treasurer.

At the annual meeting of the stockholders of the Montello Brick Co., Reading, Pa., the number of directors were reduced from 12 to 7, and the following elected: A. J. Brumbach, L. A. Rehr, N. Ferguson, W. W. Light, H. L. Boas, J. B. Fricker and J. G. Mohr.

At the annual meeting of the Alton (Ill.) Paving, Building and Fire Brick Co., a 10 per cent dividend was declared and the reports show the plant in splendid condition. The old officers were re-elected: Edward Rodgers, president, and Eben Rodgers, secretary and treasurer.

A. A. Buckingham has resigned as manager of the Northern Pressed Brick Co., at Crookston, Minn., and C. W. Graff of Minneapolis has been appointed in the place. The company will enlarge the plant and make several improvements.

The Diamond Brick and Tile Co., Arcadia, Kan., reorganized the first part of the month.

W. J. Milks and William Earle will engage in the brick business at McBain, Mich., in the spring.

G. E. Franzen has bought the entire production of the Roselle Brick & Tile Works at Roselle, Ills.

The Columbia Clay Co., Kennewick, Wash., is putting in new machinery and increasing its capacity.

Jos. R. Wait, McDonald, Tenn., wants information on brick making and catalogues of brick machinery.

W. M. Colby has organized a \$200,000 drain tile, hollow block and brick plant to be built at Lehigh, Iowa.

F. L. Cramps, Collins, Miss., contemplates the manufacture of brick to be used in the erection of a hotel.

The Columbia (Ill.) Clay Works have shut down their works and mines until new machinery is received.

The Gainesville (Tex.) Brick Co. has amended its charter, changing its capital stock from \$6,000 to \$75,000.

The city of Houston, Texas, just contracted for 1,000,000 paving brick with the Thurber Brick Co., of Thurber, Texas.

The Hillsboro (N. C.) Clay Manufacturing Co. is installing a drying plant and can hereafter manufacture brick regardless of the weather.

W. A. Harbison of the Harbison-Walker Refractories Co., Pittsburg, Pa., contributed \$25,000 to the Grove City College as an endowment.

The machinery has arrived at Peoria, Ills., for the new brick works of Biehl & Stonger. The plant is south of the city on the Penwell farm.

The Watkins (Minn.) Brick Mfg. Co. has been incorporated with \$10,000. Incorporators are H. J. Watman, Henry Ehlers, and T. P. Jones.

The Watstown (Pa.) Brick & Clay Products Co., has applied for a charter. Plans and specifications of buildings and machinery are now being made.

S. W. Wormwood is planning a 20,000 capacity brick plant for Del Rio, Texas. The land has been purchased and the machinery will be ordered at once.

The Grand Lodge (Mich.) Clay Products Co., re-elected the old officers. The factory which has been closed for several months, will be opened March 1st.

The Erlanger (Ky.) Brick & Tile Co., has been incorporated with \$5,000 capital stock. The incorporators are S. W. Adams, J. W. Collins and J. L. Adams.

The Hydraulic Press Brick Co. will operate their Brazil, Ind., plant on full time, the workmen taking a 10 per cent decrease in wages. H. A. Walter is the local manager.

The Ottawa (Kansas) Brick & Tile Co. recently elected the following officers: J. E. Byers, president; W. F. Swift, vice-president; F. B. Peck, secretary and A. Dobson, treasurer. A 12 per cent dividend was announced.

The Bureau of Manufactures, Washington, D. C., have inquiries from foreign countries for pottery machinery No. 1866; drain pipe and tile making machinery No. 1870, and floor tile machinery No. 1877. The department will give names of those wanting the machinery by writing and giving number of inquiries.

The Black Hawk Clay Mfg. Co., Sears, Ills., are repairing their plant preparatory to the spring operations.

The Shackelford Brick Co., Des Moines, Ia., will spend \$40,000 to double the capacity of their plant this spring.

Emerson and Albert Hanna and Charles Watson are back of the project to establish a brick and tile factory at Rawson, Ohio.

Charles Krebs of Sandy, Oregon, has sold his farm and is trying to purchase land near the city upon which to build a clay works.

The Ladysmith (Wis.) Brick & Tile Co. has been incorporated with \$3,000 capital stock. Incorporators are Joe Stevens, John C. Harris and J. L. Pyall.

The Pacific Clay Mfg. Co., Corona, Cali., is considering plans for establishing a terra cotta factory in connection with their plant at Corona, in Riverside county.

The Mogadore (O.) Stoneware Co., has been incorporated with \$15,000 capital stock by Wallace Pero, Daniel Wise, John P. Hall, H. B. Bixley and James A. Poulson.

Paul H. Jones, former manager of the Choctaw Pressed Brick Co., McAlester, Okla., has opened an office in the Arnott Bldg., at McAlester and will sell all kinds of building materials.

The West Virginia Brick, Tile & Terra Cotta Co., Falling Waters, W. Va., have their plans nearly ready. Charles Thyme, 4511 No. 18th St., Nicetown, Philadelphia, Pa., can give information.

The Toppenish Brick & Tile Co., North Yakima, Wash., has been organized with \$10,000 capital stock, by Garrett Bros., and B. H. Bullard. They will move the plant at Prosser to Toppenish.

The Stuyvesant (N. Y.) Brick Co., recently elected the following officers: C. R. Sheffer, president and treasurer; B. B. Smith, vice-president, and L. E. Sheffer, secretary. The office is in Mechanicsville.

The Isaac Macd Brick Works at Portsmouth, Ohio, is to be incorporated under the state law and the capacity of the plant greatly increased, besides making building brick they will make tile and paving brick.

The Choctaw Pressed Brick Co., McAlester, Okla., elected new officers as follows: W. L. Hadley, of Edwardsville, Ills., president; Fielding Lewis, vice-president; Frank Smith, treasurer, and V. P. Bnell, secretary and manager.

M. Schrabbe of Hazelton, Pa., has a proposition before the town to build a brick works near the quarry in the third ward, if the citizens will subscribe to \$10,000 stock. He has part of the machinery which was purchased from the Pond Creek plant of the Federal Clay Co.

The Columbus (O.) Clay Products Co., recently elected the following officers: Wm. A. Miller, president; John N. Bradford, vice-president; John W. Kaufman, treasurer, and M. N. Grant, secretary and general manager. The office is in the Columbus Savings and Trust building.

The Oakland Pressed Brick Co., Zanesville, Ohio, recently elected the following officers: W. H. Rutherford, president; Dr. W. E. Ely, vice-president, of Parkersburg, W. Va.; W. M. Barnett, secretary and treasurer; R. H. Rutherford, general manager, and E. F. Grimsley, superintendent.

The Caro (Mich.) Brick & Tile Works have been reorganized with \$10,000 capital stock.

The J. N. Harris Brick Co., Waco, Texas, has been incorporated with \$10,000. Incorporators are J. N. Harris, E. Rotan and J. S. Harrison.

The Fields Brick Co., of Chester, Pa., of which State Treasurer Wm. H. Berry is largely interested is preparing plans for a number of homes for their employees.

The Berthoud (Colo.) Pressed Brick Co., capitalized at \$30,000, is being organized. An option has been secured on land belonging to S. S. Osborn, W. L. Birdsall and A. C. Breach are interested.

M. M. Bushong, who has been the superintendent of the Banner Clay Works at Edwardsville, Ills., for the past two years resigned Feb. 1st and F. Z. Luth of St. Louis was appointed in his place.

The Saginaw (Mich.) Paving Brick Co., re-elected its old officers, John H. Qualman being president and manager. The plant has been closed down on account of the weather and will undergo repairs before opening up.

C. A. Bartz of Tacoma has leased the West Coast Brick and Tile Co.'s plant at Centralia, Wash., to George Sturgess and a new company is being organized to run the plant. New machinery will be installed and needed improvements made under the management of Arthur Brookwell.

The Burke Brick Co., Ft. Smith, Ark., has filed articles of incorporation with \$150,000 capital stock. The president is M. C. Burke; Frank A. Handlin, vice-president; secretary, John H. Vaughn and treasurer, Mrs. Nellie Quinn. The corporation has taken over the brick plant built by Burke Bros., and will operate same at full capacity.

## DIRECT HEAT

# DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**

62-64 William St.

NEW YORK CITY



## CLAY RECORD.

## WANTED

Superintendents brick manufacturing plant; estimator fire-proofing, steam, brick and sewer pipe, sale-man, terra cotta, bookkeeper, manufacture, private secretary to manager, salary \$2.50 to \$5.00. Other positions in our 12 offices open. Write THE CLAY RECORD, New York, or 1610 Hartford Bldg., Chicago.

## BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled factories are offered complete, or in part cash. Have several Brewer Mills for sale and others.  
Engines, Boilers, Crushers (Tearing Pipes) etc. If you wish to buy or sell write  
Brick and Tile Machinery secor III

## FOR SALE

Our second Express in number one condition, used only last a short time, capacity 10000 per day. Ask for full particulars.  
American Reamated Brick & Tile Co.  
1 Madison Ave. New York

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines with repair parts sufficient to make machine first-class. Capacity 750 to 1000 per hour. Greatest bargain. Write for particulars.  
GREAT FANTASY CLAY CO.  
29 Cortland St., New York

## FOR SALE

Three two-press Whitaker pressed machines. Each machine is complete with counter shaft and ready to run. Condition good.  
One single press Whitaker machine, all complete and ready to run. These machines are for making pressed brick. Condition good. Special price.  
6,500 soft pine pallets, each 30 inches long, 9 inches wide and 1 inch thick. Your pick of these pallets for six cents apiece P. O. B. cars.  
We also have several engines and boilers, heaters, pumps, and connections.  
THE COLLIER EQUIPMENT CO.  
304-206 Brunson Bldg., Columbus, Ohio.

FOR SALE (CHEAP)—New and re-laying rails, 18, 16, 10 and 8 pounds. For price, address,  
ATLAS CAR & WFL CO.  
Cleveland, Ohio

## WANTED

We want to buy at once a large building of some kind which we can utilize for drying sheds for drain tile. Give us full description of building what it has been used for and how much price as well as location in first letter. We mean business and want definite replies.

The Consolidated Tile and Brick Mfg Co.  
Kiang Sun Ohio

## BRICK PLANT FOR SALE

Containing about 50 acres of best clay without top soil perfect drainage situated midway between Baltimore & Washington with necessary railroad facilities. Plant was partly destroyed by fire. Two stiff mud machines, engines, steam, brick tunnel hot air drier with 240 steel cone trackage and kilns remaining. Large house containing a room for superintendent. Purchaser could make this a modern fully equipped two machine plant for a little money.

Address G. A. B.  
Clay Record, 311 Dearborn St.  
Chicago, Illinois

## WANTED

A practical Brick Burner, state wages, experience to the  
Bacon Brick Co., Ltd.  
Vermillion Ill., Can

## POSITION WANTED

I have had twenty-two years' experience in fire clay, brick, hollow brick, building the gas retorts and settings. Understand making magnesite and silica brick; want position as superintendent.  
W. T. J., care Clay Record,  
Chicago, Ill.

## POSITION WANTED

Young man desires a position as Superintendent or sales manager, understanding stiff mud and dry press processes. Has traveled extensively.  
THOMAS KELLY, care Clay Record,  
Chicago, Ill.

## FOR SALE

One No. 2 Potts & Co. Clay Integrator. Used only six months. Address  
C. S. LEIPER, JR.,  
Aurora, Illinois

## FOR SALE.

Right and left hand One Two and Two & 1/2 Way Switches, of various sizes, radius and weight rail, at special prices.  
THE ATLAS CAR & WFL CO.  
Cleveland, Ohio

## FOR SALE

Three Tyle and Brick Plant, including sheds and Kilns and Acres of land underlaid with limestone. It will sell machinery consisting of one 8 horse power Boiler one 10 horse power Engine one J. H. Tyle Machine with dies to 12 inch one Raymond Integrator one Heavy Automobile one Tyle one sub-cut Brick Table and dies one elevator. Cars, Trucks Wire-Barriers etc. Address  
Mallins & Long  
Nemio Ohio

## WANTED

A thoroughly competent and reliable Superintendent to manage a stiff mud brick plant at Columbia, Mo. Capacity 25,000 a day, output principally paving.  
Must have A-1 references, no other need apply. Address or reply in person  
EDWARDS BRICK CO.,  
Columbia, Mo.

## PARTNER WANTED

A good, reliable man of experience with some capital in real estate and in the clay business. The FERNHOLTZ BRICK MACH. CO.,  
Old Manchester Road,  
St. Louis, Mo.  
DEINER care Clay Record,  
Chicago, Ill.

## FOR SALE

Second-hand presses of different sizes and make. Good machines and low prices.  
THE FERNHOLTZ BRICK MACH. CO.,  
Old Manchester Road,  
St. Louis, Mo.

## BRICK AND TILE PLANT FOR SALE

At Carthage, Ill., Hercules soft mud brick machine, 25 H. Madden & Co. machine for making tile and stiff mud brick machinery, sheds and kilns in good repair; 35 H.P. engine and 50-H.P. boiler, new. Address,  
W. E. LYON & Co.,  
Carthage, Ill.

## POSITION WANTED

Position as a permanent and practical brickmaker as superintendent of a stiff mud or dry-press brick plant. Experience in burning brick and care of a kiln and machinery. Address  
W. S. care of Clay Record,  
Chicago, Illinois

## FOR SALE

One Kells Brick Machine. One No. 13 Integrator for Horton Co. make. One small one-side cut cutting table Wallace Co. make. One 80 horse power tandem Engine. Seventy-five Bricks Moulds. All in good condition. Address,  
W. H. Vander Hayden  
Ionia, Mich

## FOR SALE

One Hercules brick machine, Horton Mfg. Co. make, capacity 40,000 per day. Also mould number for same. 50 good moulds machine has only made 2 million brick. Brick sheds, racks and pallets repaired. 100,000 brick, 5 good brick trucks. Good reason for selling.  
L. H. care Clay Record,  
Chicago, Ill.



## SUPERINTENDENT WANTED

A superintendent for a stiff mud and is brick plant. One desired that can has an interest in the company. SUPERINTENDENT  
Care Clay Record, Chicago, Ill.

## FOR SALE

One-half the stock of successful incorporated dry-pressed red brick company, carrying with it position of secretary-treasurer of the company. Situated in Illinois city of 60,000, is fully equipped, new running, prosperous and has established and growing trade in adjacent territory as well as in Chicago. Present holder is in poor health and has other business. \$75,000 will buy half the stock, cash or negotiable paper. Excellent chance for good man. Holder of other half of the stock is one of the best-known brick makers in Illinois. Address, U. S., care Clay Record,  
Chicago, Ill.

## FOR SALE

A 8-foot American Clay Machinery Co. Dry Pan in first-class condition. Will sell cheap to avoid moving.  
SMITH BRICK COMPANY,  
Omaha, Neb.

## WANTED

Superintendent for building block and drain tile plant. Must be well-versed and capable of obtaining best possible price for quantities received and salary.  
B. J. care Clay Record,  
Chicago, Illinois

## FOR SALE

Boiler 8 tubes, 15 inches 15 feet long by 66 inches horizontal.  
2 Steam Gear Tempering Wheels complete.  
1 Parts Disintegrator, 8 inch rolls.  
1 American Clay Manufacturing Co. Brick side (4000 lbs.)  
1 Carbell Single Die Steam Recept 15 M. daily  
1 J. C. Steele & Sons Brick Machine, Automatic No. 60 M.  
1 American Clay Mfg. Co. No. 40 Brick Machine, Automatic Rotary 20 M. side Cutter or End Cut is brick, capacity 100 M. brick per day.  
1 Chambers Automatic Pad Cutting Machine, 30 M.  
1 Chambers Automatic Pad Cutting Machine, 30 M.  
1 Richardson Double Die Press, made by Ohio Ceramic Co.  
1 Martin Drag Belt Conveyor 35 feet long 15 inch belt  
6 Clay Drag Carts  
12 Sets Cars Harnesses  
12 Trucks  
1 On horse power Slide Valve Engine  
1 Roller-Brick-on Hot Air Pump  
1 Vane Roller  
1 Davidson Pump 2 inch discharge  
Address NEW JERSEY  
CARE OF CLAY RECORD  
Chicago, Illinois

## FOR SALE

Piping, cars, track and foot pallets contained in a brick drier of seventy thousand capacity.  
F. PERCIVAL GOLDIN,  
Catskill, N. Y.

## SHALE CLAY FOR SALE

Have bed of red, chocolate and blue shales exposed full length of 3,500-foot railway cut and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow brick, brick, paving block, tile, sewer pipe. On river. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Union Railway Co.  
Des Moines, Iowa



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**REPORT OF THE THIRTIETH ANNUAL  
MEETING OF THE ILLINOIS  
CLAY MANUFACTURERS'  
ASSOCIATION  
FOURTH SESSION**

The fourth and last session of the Illinois Clay Manufacturers' association was called to order at 10 a. m. January 16, in the Assembly Hall of the National Hotel, at Peoria.

The first paper taken up was on "The Ceramic Department of the University of Illinois and What it is Trying to Do," by Prof. C. W. Rolfe of Champaign.

**REPORT OF PROGRESS OF THE DEPARTMENT  
OF CERAMICS OF THE UNIVERSITY OF  
ILLINOIS FOR THE YEAR 1907**

I come before you today simply to make a report of progress for the Department. Shortly after the close of last year's session Mr. Krehbiel received a commercial offer which seemed to him desirable and at his request the University released him. Mr. Krehbiel's relations with the University authorities were always pleasant and I take this opportunity to express our appreciation of his gentlemanly qualities and of his efficiency and mechanical skill.

Mr. Krehbiel's retirement left Mr. Purdy alone in the Department and as the work was far too heavy for one man to carry, negotiations were at once opened with Professor A. V. Bleiminger, E. M., of the University of Ohio, one of the foremost ceramists in this country, and arrangements were made for him to begin work July 1st. We consider ourselves peculiarly fortunate in having able to make this arrangement, as in addition to Professor Bleiminger's undoubted scholarship he has certainly had more experience as a teacher of ceramics than any man in America and the excellence of his work is attested by the marked success attained by his pupils. We confidently predict that he will do a great work for the ceramic interests of Illinois.

Professor Bleiminger's withdrawal from the staff of the Ohio School left them short-handed, and Professor Orton recouped on us by offering Mr. Purdy opportunities for teaching and study which it was not possible for us to duplicate. He left us on July 1 to take up his work in Ohio.

I take pleasure in this connection in testifying to the very efficient service which Mr. Purdy rendered to the cause of ceramics during his residence in Illinois, strong physically and mentally, with unbounded energy and never flagging zeal, with an enthusiasm in his work that takes no account of time or effort and with a ceramic instinct which is unusual I predict for him a career of great usefulness in his chosen profession.

Early in July arrangements were made with Mr. Herford Hope of Pennsylvania to come to Illinois and take charge of the work in pottery. Mr. Hope is descended from a long line of English potters and has had exceptional opportunities in practical work with his uncle, Mr. Ernest Mayer, proprietor of the Mayer Potteries in Pennsylvania.

In August we secured the services of Mr. R. T. Stull, E. M., a graduate of the Ceramic Department of the University of Ohio, who since graduation has had large experience in the manufacture of terra-cotta and enameled brick.

The investigations spoken of in my report of last year have all been completed and the results published in the proceedings of the "American Ceramic Society," and also in the form of bulletins which have been distributed to all clay workers of Illinois who have taken the trouble to send their address to us.

Bulletin No. 1, 22 pages, contains a Study of the Causes of Efflorescence on Brick, by J. C. Jones of the Department of Geology.

Bulletin No. 2 was published in two parts. Pt. 1, Studies in Fritted Glazes, 94 pages, by R. C. Purdy and H. B. Fox, is an attempt to ascertain by direct experiment what variations in composition and heat treatment are admissible in the use of this class of glazes.

Pt. 2, Studies in Crystalline Glazes, 93 pages, by R. C. Purdy and J. F. Krehbiel, contains the results of a similar study in crystalline glazes.

In both parts the compositions of the glazes used are given in tables and the results are shown both graphically and in tables.

Bulletin No. 3, A Study of the Pyro-chemical Behavior of Certain Clays used in the Manufacture of Paving Brick, 116 pages, by R. C. Purdy and J. M. Moore, is an attempt to ascertain the chemical and physical changes which take place during the burning of such clays and the effect of these changes on the quality of the brick.

Bulletin No. 4, which is really the sixth of the series issued by the department and is so numbered, is a study of the Effect of Repeated Freezing and Thawing on Brick Burned to Different Degrees of Hardness, 51 pages, by J. C. Jones, of the Department of Geology.

In addition to this the State Geological Survey will shortly publish a report of 300-400 pages on paving brick and clays suitable for use in the manufacture of pavers, which was prepared by the Department and contains in addition to the purely ceramic work chapters on The Construction and Care of Brick Pavements, by Professor I. O. Baker; The Qualities of a High Grade Paving Brick and the Tests which

Should be Used in Determining Them, by Professor A. M. Talbot; and On the Geology of Clays, by Professor C. W. Rolfe. The publication of this volume has been delayed by the overcrowded condition of the State printing office.

It is the understanding of the Department that no one of these studies is exhaustive. They merely prepare the way for later studies which the Department hopes to make, and which are expected to lead to much more practical results. So little is really known of the fundamental principles on which the common ceramic processes rest that anything like a thorough investigation of a large ceramic problem must necessarily involve a large amount of work in proving or disproving the theories on which the processes are supposed to rest before the really practical parts of the investigations can be touched. It is this theoretical work which has engaged the larger part of our attention in the preparation of these bulletins, and we find that considerable more in the same line must be done before really practical work on these subjects can be undertaken.

July 1, 1907, a new series of investigations was begun, some of which are completed and the manuscripts nearly ready for publication, while with others experimental work is still in progress. We hope that the results of these investigations will be found helpful to the clay-working fraternity.

The first investigation in this new series was a study of the Heat Balance in several types of kilns making different wares. One kiln making building brick, one making pavers, two of widely different types making terra-cotta and one making sewer pipe were included in the investigation.

No changes were made in the kind or amount of ware burned in each kiln, nor in handling or firing. Everything was carried on as though the experimenters were not at work except as indicated below.

All the ware set in the kiln was carefully weighed as was all fuel used. All air entering the kiln at each period of burning was measured and its velocity noted. The intensity of oxidizing or reducing conditions at each stage of the burn was ascertained. Draft gages were used to measure the velocity of gases in the flues. All the gases were analyzed as were the fuel used and ash produced, and the calorific value of the coal and ash was ascertained. These observations and the calculations based on them furnished data for a complete history of the changing heat conditions during the progress of the burn and of the effects produced at each stage. It is hoped that the results will enable clay-workers to make more effective and economical use of their fuel.

2. Eutectic Mixtures. According to the theorem of Le Chatelier and Ostwald at any given temperature that combination of acids and bases is invariably formed which is most fusible under those conditions. For its constituents of clay, silica, alumina, iron oxide, lime, magnesia, and the alkalis, therefore, there exists at each temperature one, and only one, most fusible mixture, called the eutectic. The latter in the nature of the case governs the degree of vitrification of a clay body at that temperature. A knowledge of the most fusible combinations is therefore of vital importance in the study of clays, and this has hitherto been entirely neglected. We are making a systematic study of the various combinations both as to the point of vitrification and to that of fusion. The mixtures are plotted on triaxial diagrams and the vitrification and fusion points are joined by isothermals. This will result in the plotting of fusion and vitrification areas which represent the eutectics formed.

3. If vitrification is measured by the rate of decrease in density, the addition of fluxes to clays ought to accelerate this change. On the other hand, the addition of refractory clay and silica should retard it. We have made experiments to the number of several thousand which are to show whether the assumptions made above are true or whether they are exceptions to the rule. We have made eight specific gravity

determinations on each mixture as well as corresponding measurements of absorption, porosity, etc.

4. Although we have some knowledge of the laws governing the fusion of lead silicates, they are not clearly understood. Our work shows the fusion curve of the lead-aluminosilicates, thus clearing up this point. Its importance is evident when we consider the large number of lead glazes used in practical work.

5. We have clearly shown that the plasticity of clays can be determined by means of their viscosity. We do this by means of an apparatus consisting of a disc suspended by a long wire and rotating in a basin which has a graduated edge and which is filled with slip. We have obtained striking results by plotting the viscosity shown against the percentage of different clays contained in a slip and have fixed the position for Tennessee ball clay No. 7, North Carolina kaolin and Florida kaolin. The viscosity of each slip is measured by obtaining the ratio of one oscillation to the next in the same direction. The viscosity of water is made equal to unity. The logarithm of the ratio of the amplitude in water divided by the logarithm of the amplitude in the slip will give the viscosity of the slip. This method is very sensitive and can be applied to a study of the effect of salts upon clay, as for instance to the action of the sodium carbonates upon kaolin.

6. Mr. Stull is endeavoring to produce: (a) An opaque slip upon a stoneware body, giving a pure white color; (b) An opaque glaze, using calcium phosphate, fluorides and calcium borates. If these can be used the glaze will be cheapened considerably. He has already shown that barium oxide can be used in the raw condition as a flux. This problem is of practical importance to the manufacturers of stoneware and enameled brick. The slip problem alone is a very vital one in the use of No. 2 fire clays.

7. Mr. Hope is studying the properties of magnesia porcelain, its decrease in porosity, translucency, toughness and rate of decrease in specific gravity. Magnesia is to take the place of lime. A lime series is to be run parallel to the magnesia bodies.

8. Mr. Lines is making a study of the drying curves of clays. The loss in weight and the shrinkage are plotted against time, the drying temperature being kept constant at 60°C by means of a thermostat. The shrinkage is measured by means of a vernier caliper reading to 1/10 mm. The test pieces are in the shape of spheres thus eliminating the irregularity due to unsymmetrical shapes. Three classes of Illinois clays are being studied: Shales, No. 2 fire clays, and joint clay.

9. Mr. Francis is preparing 50 Portland cements of varying silica-alumina and silica-lime ratios. These are to be burned, ground, and tested in the calorimeter for the heats of hydration. These are to be plotted and the resulting curves studied. It is impossible to say what conclusions may be drawn, but the experiments will undoubtedly throw some light upon the setting phenomena of Portland cements. Parallel with the calorimeter tests the cements will be tested for consistency of volume.

Instructional work in ceramics may be said to have begun with the opening of the fall semester in September, 1907. It is true that some instruction had been given before that time, but the conditions were such that the work could hardly be called regular. Last year nine students were in attendance, several of whom, for various reasons, withdrew at the close of the year. This year we have twenty and there are classes in all subjects offered in the four year course. One excellent young man, Mr. J. K. Moore, will graduate in June.

Last week a four-day institute was held at the University, to which all clay-workers were invited. Something like twenty-five persons responded, three of whom were from

central Iowa, one from Missouri, and one from Wisconsin. The instruction was all given by our own teachers. The mornings were devoted to lectures, the afternoons to laboratory work and demonstrations, and the evenings to round table conferences. All present seemed pleased with the results so far as we could ascertain. Ask them and find out what they think about it.

It is the earnest hope of the Department that more and more clay workers will attend these institutes each year, and that if you have any preferences as to the subjects to be discussed you will make them known. We wish to make the institutes as helpful as possible to those who for any reason cannot attend the regular courses, and we earnestly invite your co-operation to this end.

We will always welcome suggestions as to ways in which you think the University can be more helpful to the clay industries.

Perhaps I should say a few words in closing about legislative matters. Last year we asked an annual appropriation for the two-year period of \$15,000, making it clear that \$10,000 was to go for a new building and \$5,000 for machinery and equipment, which could not be utilized until we had the building. The bill seemed to meet no opposition until the closing days of the session, when without warning the item was stricken out by the appropriation committee of the Senate. This occurred on Thursday. The following Monday, largely through the efforts of members of your own body, the leaders in the Senate and House agreed that the item should be reinstated, but without the special provision for building and equipment. That is, they agreed to put in \$7,500 per year for instruction and investigation, which was what we asked for those purposes, but nothing for a building or the equipment of the building. The result is that we are so badly crowded for room that it is impossible to make our work as effective as it otherwise would be.

The addition to Natural History Hall, for which provision was made by the Legislature, will afford a little relief, but it is already evident that the capacity of this addition will be entirely inadequate to accommodate the interests which are expected to find a home in it, and, if the Department of Ceramics is to continue to grow, it will be absolutely necessary that the request for a building be renewed next winter and that you see that it goes through together with an increased appropriation for maintenance.

I hope that you will see fit to appoint a strong committee, composed of men who will make whatever sacrifice of time and energy may be necessary, to secure these needed appropriations.

President Pratt: The article is very complete in itself. We regret that the people at Springfield do not appreciate what we are trying to do and do not realize that studies and investigations require financial aid.

Mr. W. P. Blair: Is there a permanent committee to look after that legislation?

President Pratt: There is a committee that is left over from last year. Can the chairman of that committee make any report?

Mr. Stipes: Gentlemen, I do not know that I have any formal report to make, any more than what has been said in that paper. As you notice, we were cut out along with a number of other things. The Geological Survey was cut out. We were obliged to let the appropriation go into what is known as the Omnibus Bill. When they came to make up the list they found that they had more money asked for than they had money to appropriate and they had to begin chopping somewhere. They thought that the Clay Worker would say less about it than anybody else. We went down and had a talk with them and finally they reinstated that amount. As long as we could not get it all, we were glad to get \$5,000 over and above what we had before. I think it is a good

idea if each member of this association would see that his representative is interviewed on this subject.

I do not know of anything that will develop the resources of the state more than that one thing. And with little effort on each one's part I think it will be very easy to show to your representative that that is a fact, and of course when you are increasing the revenues of the state by looking up these deposits, you are going to help everybody.

I hope each member will take upon himself to look out for his senator or representative and get him in favor of it. If you put it in the right light, you won't have very much trouble, because it is a good cause.

President Pratt: We will now take up the next paper on the program, "Brick and Tile Machinery," by R. T. Stull of the University of Illinois. Mr. Stull has changed the subject to "Making Front Brick Without Repressing."

#### MAKING FRONT BRICK WITHOUT REPRESSING

One of the two methods of making impervious brick is the well known stiff mud, wire cut, repress method. Plants making this kind of brick have been laboriously educating the trade up to the belief that the repressed brick direct from the cutter is a stronger brick than the one not introduced to the press box. The fact is that the strength of a brick is more often injured than benefited by direct repressing. The discovery of this fact, coupled with the consideration of the cost of repressing, has been the means of abolishing repressing in a few plants.

Variation in tempering or pugging and variation in composition or mixture, cause variations in the size of the column issuing from the die. In order to make allowance for this variation, the die is made small enough so that the brick, when cut, will drop into the press box without "sticking" or binding. In this case the brick does not fill the press box neatly. Therefore when the pressure is applied, the clay is forced out until it meets the sides and ends of the box, producing a rearrangement of structure which influences the final strength of the brick for better or for worse.

A lamination within the brick is seldom healed in the press box. The space between the walls of the lamination cannot be a vacuum; it contains air, vapor or other gas. The walls of the lamination cannot be united under pressure unless the enclosed gas is forced out, which must either come to the surface of the brick or be assimilated by the clay. The former case rarely, if ever, occurs, while the probability is that the latter does not occur at all unless the clay exerts an absorbing action for gases, similar to that of charcoal. The fact is that when the enclosed gas is subjected to pressure, it causes the lamination to spread rather than to diminish.

It is difficult to see how it is possible for the repress to produce permanent condensation in a brick direct from the cutting table, if the clay has been thoroughly tempered. Liquids suffer but little condensation under pressure, owing to which fact the success of the hydraulic press, used for various purposes, is made possible. The fractional part of condensation which does take place causes the liquid to expand to its normal volume when the pressure is released.

Clay in the plastic condition exhibits the properties of liquids to some extent although it is slower in its action due to high viscosity. There is a small condensation of the brick, while under pressure, due to elasticity which causes the clay to expand when the pressure is relieved; therefore there is little gained by elastic condensation. Permanent condensation cannot take place unless something is eliminated from the brick, or the enclosed gases are compressed and held in the compressed form in which they tend to exert expanding action until released.

The repress requires more oil than is used to lubricate all the rest of the machinery in the plant, although oil of a

## CLAY RECORD.

cheaper grade is employed. Oil enters the surface indentations and corner cracks preventing them from healing under pressure. The slicking action due to the ejection of the brick from the press box, partially smooths over the flaws so that it is impossible to detect them in some cases, only under close inspection. These flaws pass through the kiln and remain weak points, unless the brick have been highly vitrified even to the danger of settling out of shape.

Defects in moulding are magnified in the drier and show up still more in the kiln, due to stresses and strains produced by shrinkage. Flaws that cannot be detected in the moulding show up in the drier and cracks which cannot be detected in the drier appear in the burning; hence it is possible for the clay worker to lay the blame of defects to the burning which are due to something else. The burning problem has an abundance of difficulties of its own without standing for faults due to other causes.

Often the burning is changed to decrease the loss and the clay worker wonders why the loss does not decrease. Sometimes the loss is decreased by nursing the defects through the kiln which later may show up in shipping, or, in the case of paving brick, go to pieces in the rattler.

PLATE NO.1

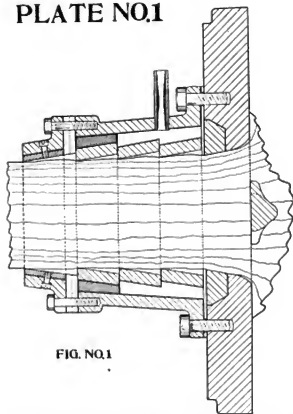


FIG. NO.1

The method employed by some to make front brick is to force a column of clay out of a die, cut it into more or less regular blocks, and feed them to the repress, depending upon the repress to form the brick. Corner cracks and other defects are not seriously considered, which is a great mistake. The nearer perfect a brick is before it goes into the press box, the more perfect a brick can be taken from it. The best feature of the repress is the fact that it does help to corner up and square an otherwise irregular block of clay. If it is possible to make a first class stiff mud front brick without the repress, then why go to the unnecessary expense?

Many plants in Germany are making stiff mud enamel brick without the aid of the repress. The brick are wire cut, dipped and burned in a single fire. In one case a wide awake

and progressive brick maker in America is successfully making a high grade enamel brick today by a patent veneering process and wire cutting. The brick in this unique plant have not seen a repress in over four years.

If the stiff mud wire cut process is good enough to make a high grade enamel brick worth \$50 per thousand, then why is it not good enough to make a high grade front brick? The writer has produced practically in an experimental way, stiff mud, wire cut brick from No. 2 fire clay which were burned so hard that they were bluestoned, and which had just as smooth faces, straight edges, and sharp corners as can be produced by repressing.

PLATE NO.2

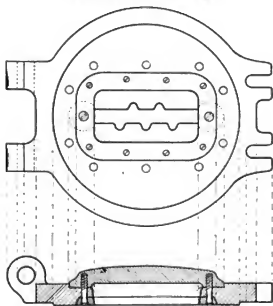


FIG. 2

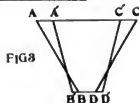


FIG. 3

It is true that the wire cut sides are not so smooth or pleasing to the eye as the sides of the one which has been subjected to the repress, but when vitrified, this is a strong point in favor of the non-repressed brick, since it will not slide out of position so readily when laid in the wall by the mason as a smooth repressed brick will often do.

For the manufacture of a wire cut front brick, the clay should be thoroughly and carefully prepared. Both clay and grog should be passed through a screen not coarser than ten mesh in order to produce a dense body and induce a smoother cut at the table. Constant and uniform composition of clay and grog should be maintained for the benefit of constant shrinkage.

Thorough and careful tempering should be done for the purpose of obtaining uniform working qualities and uniform shrinkage. Uniform results cannot be had from variable degrees of temper or loosely tempered clay. Water should be worked into the clay until it is uniformly tempered throughout to the proper degree. The ordinary open pug mill does not do this, but the tempering of the clay in an open pug can be improved by increasing its length which, through this, increases power consumption. The most thorough and accurate tempering device is the wet pan. Even here the

variation of temper from pan to pan will be such as to be often detected by the working of the die, even when a careful manipulator is in charge of the wet pan.

The two most important devices to consider in making stiff mud front brick without the repress are the die and the cutting table. In the first place the clay should be tempered very stiff, so stiff in fact that the majority of the dies on the market would refuse to work it. If we wish to produce a perfect column of clay we must have a perfect working die.

Wearing away of the die increases the size of the column, increases friction, decreases speed, cuts down lubrication, and if allowed to run long enough, produces laminations close to, and parallel with the surface, which are in the nature of cleavage ruptures. If the clay is of a dense nature, steam may collect in these laminations in drying or gases in burning producing blisters on the face of the brick.

Therefore it is important to keep the die frequently renewed, the increase in expense of which will be more than paid for by increase in quantity and quality.

Most auger machines for brick are provided with a chamber placed between the barrel and the die, whose function it is to gradually taper down the clay from the circular to the rectangular form. With a properly constructed die for running very stiff clay, this reducing chamber is an unnecessary adjunct. By placing the die next to the barrel, as close to the auger as possible, the capacity of the machine can be increased from ten to fifty per cent.

Fig. 1; plate I represents a vertical cross section of an assembled die used next to the barrel of the machine, dispensing with the reducing chamber. It is constructed in sections provided with removable liners, which can be replaced without the necessity of throwing away a heavy casting. At the extreme right of Fig. 1 is the hinge plate designed to fit the barrel of the machine. It is provided with a removable face plate on the front and a lamination bar on the back which reduces laminations by breaking up the circular laminating tendency due to the motion of the auger. For hollow brick, the lamination bar can be modified to support the cores.

A scale box is bolted to the hinge plate with a water-tight gasket between. Inside the scale box are three removable scales. The third one from the hinge plate is fastened in place by pouring molten lead between it and the scale box. The other two scales are held in place by wooden wedges. At the top of the scale box is a nipple for lubrication purposes.

In this die water is used for lubrication. The water which enters the scale box can circulate around the first two scales and pass through between them in order to moisten the column of clay. The only outlet which the water has is to pass through between the clay and the scales which it will do if the water pressure is strong enough.

Bolted to the scale box is the die plate with a drain plate between. Water which passes through with the clay column is "slicked" off by the die plate and runs out at the drain plate. The drain plate is made solid on the back with lugs on the front. In case the lead packing of the third scale should leak, a rubber gasket can be placed between it and the drain plate.

The die plate is lined with four steel pieces, a top and bottom piece and two end pieces which are held in place by finger screws.

Fig. 2, plate 2 shows the detail construction of the hinge plate with lamination bar and liner in position. Fig. 4, plate 3, shows the construction of the scale box. The scales are shown in figs. 5, 6, and 7, and the drain plate and die plate by figs. 8, and 9 on plate 4.

No definite measurements can be laid down for the construction of the die, since the size of the individual openings for each part will depend upon the total shrinkage, the back

pressure, and the taper of the die. In a die of this type there are two kinds of taper called individual taper and die taper. The depth of the three scales and the die plate as represented in the foregoing cuts are each  $1\frac{1}{4}$  inches. The individual taper here for all parts is the same and is  $1\frac{1}{2}$  inches, i. e., the back opening of each part is  $\frac{1}{4}$  inch larger all around than the front opening, which makes the larger

## PLATE NO.3

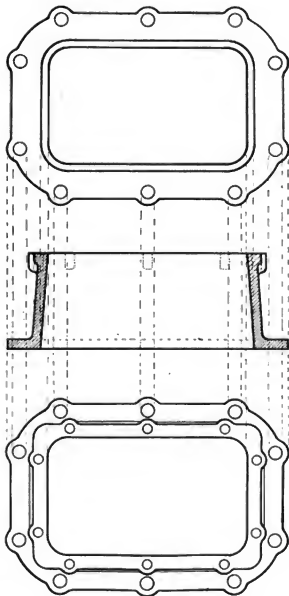


FIG. 4

opening  $\frac{1}{2}$  inch larger in length or width than the smaller opening. The die taper is the amount of linear reduction which the column undergoes in passing from the smaller hinge plate opening to the smaller die plate opening. In this instance the taper is  $\frac{1}{4}$  inch, i. e., the smaller hinge plate opening is  $\frac{1}{8}$  inch larger all around than the smaller die plate opening, with the exception that the hinge plate

opening has a fillet in each corner of  $\frac{3}{8}$  inch radius, while the die plate opening has sharp corners.

Thoroughly tempered stiff mud clay cannot be permanently condensed beyond a very small limit; therefore with a die having a large taper, the clay travels with different velocities at different points along its path through the die. There is, however, a temporary condensation due to, and depending upon, the elasticity of the clay with its enclosed gases which causes the column of clay to expand again on issuing from the die.

## PLATE NO.4

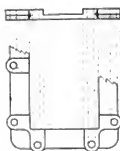


FIG. 8



FIG. 9

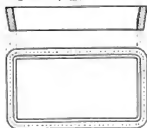


FIG. 7



FIG. 6



FIG. 5

The greater taper a die has the more power is required to operate it, the less is the speed of the column, greater pressure is required to lubricate it, the faster is the wear and the greater is the re-expansion of the column. Decreasing die taper decreases power for operation, increases speed, decreases pressure for lubrication, decreases wear and decreases the elastic expansion of the column.

Total expansion of the clay column is not entirely due to die taper, but part is due to "back pressure," or resistance offered to the column of clay in its travel from the die to the cutting table. In cases where the motion of the column furnishes the power to operate the cutter, the back pressure swells the column of clay appreciably.

Excessive expansion of the clay column is one cause of superficial weakness in the brick. Brick which were made by the writer with a die of large taper, gave trouble in cracking across the face in the kiln. When the die taper was reduced down to almost a parallel die, cracking across the face disappeared.

Whether expansion is due to excessive die taper or to back pressure, it can be reduced by decreasing the taper of the die. In reducing the die taper it was found necessary to increase the die plate opening slightly, in order to maintain a standard sized brick. Thus in fig. 3, plate 2, let A C represent the face of the hinge plate and B D be the face of the die. Let A B and C D be the taper lines of a die. If reducing the taper reduces expansion (which is true), then when the taper is reduced so that A moves to some point as A' and C to C', B must move to B' and D to D' in order to maintain a standard sized brick.

In other words, when the taper of a die is reduced, the taper line must swing about a point upon itself near the die opening in order to produce the same sized brick as before, the other things remaining constant. The position of this point will depend upon the elasticity of the clay and the back pressure. In one instance the writer found that it was necessary to increase the size of the die plate opening  $\frac{1}{16}$  inch when the die taper was reduced  $\frac{3}{8}$  inch.

It is important to keep the die frequently renewed and maintained standard for the benefit of quantity, quality, and standard sized brick. The brick should be carefully watched as they come from the kiln. Most of the defects in shape can be remedied by slight changes in the die plate. If the brick are hollow faced as represented by fig. 10, plate 5, a corresponding opposite curvature should be put in the die plate, producing a die opening as represented by fig. 11 in form. If the brick come from the kiln longer on the back than on the face as represented by fig. 12, then the die plate liners should be closed in at the bottom, making the form of die opening similar to that represented by fig. 13.

Softening the temper of the clay magnifies hollow faced brick and causes the column of clay to spread at the bottom, which produces brick longer on the back than on the face, hence the importance of keeping a uniform temper of clay, since the die plate cannot be constantly changed for alternate changes in temper of the clay.

Perfect lubrication is necessary for a perfect working die. Water gives better results than steam when rightly operated for running very stiff mud out of a properly constructed die. If the lubrication is cut off or reduced, the friction is increased far greater at the corners than at the middle, as represented by the length of the arrows in fig. 14. Brick when cut perfectly square from such a column will dry and burn with a side warp as illustrated by fig. 15.

The remedy for this would be perfect lubrication, if perfect lubrication were possible. Perfect lubrication can be very closely approached by a properly installed lubricating device. Increased stiffness in temper of the clay requires increased pressure for lubrication. Also gradual wear of the die requires gradual increase in lubricating pressure.

These points have been observed in a water lubricating device represented by fig. 16. This lubricating system consists of a sheet iron tank which holds enough water for the day's run. Two pipes lead into the top, each provided with a valve. One pipe is used to fill the tank from the water supply; the other pipe at the top leads to the boiler. After the tank is filled the valve in the water pipe is closed and the valve in the steam pipe opened. This places the water in the tank under boiler pressure.

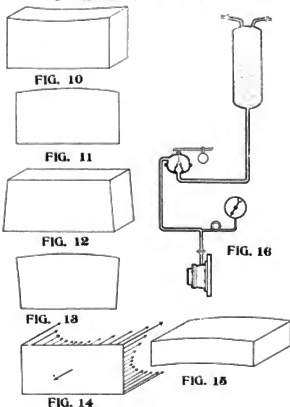
A pipe leading from the bottom of the tank is connected with the die. Between the tank and the die a pressure regulator is placed in the line at a convenient place where it can be operated at will. Between the pressure regulator and the die a pressure gauge is placed. By sliding the weight back and forth on the regulator arm, any pressure can be had at the die from 0 pounds to boiler pressure. With a newly equipped die having  $\frac{3}{8}$  inch taper, the pressure gauge registered 25 pounds for perfect lubrication at the die. As the die began to wear, the pressure had to be increased and after

six days wear on the die, it was found necessary to have 40 pounds water pressure for perfect lubrication of the die.

The advantage of the pressure regulator is that the pressure can be reduced at will and at the same time have plenty of water for lubrication with the valve at the die wide open. When the valve at the die is depended upon to throttle down the pressure to the proper point for lubrication, the supply of water is often cut down too low for proper lubrication.

The greatest drawback to the manufacture of high grade wire cut stiff mud front brick at present is the cutting table problem. Most of the cutting tables on the market are comparatively crude in their construction and operation. A coarse wire is used to decrease breakage and the motion given to it is usually that of a rotary drag or straight chop, which produces a rough burred edge either on the top or end of the column, or on both.

## PLATE NO. 1



In order to produce a smooth cut on the edges of the brick a fine wire should be used. Its motion should be a combination of a backward and downward sliding and sawing motion, similar to that which a carpenter gives to a single stroke of the saw. Such a motion would reduce wire breakage wonderfully, and allow the use of a finer wire. Wires seldom wear out, they usually break.

In order to make a perfectly straight and uniform cut, it is necessary to have a very carefully constructed cutting table, one constructed with as much care as a high grade turning lathe. The cutting table should be carefully machined and assembled and provided with bushings and liners for all wearing parts, so that the slightest wear or play can be taken up at will.

Such a table is not on the market today. It would be considered too expensive, but when the brick maker sees the advantages and possibilities in such a cutting table, then the machine companies will bring it forward, provided the brick maker is willing to pay the price.

The clay manufacturer is far behind his brother manufacturers who are engaged in other lines of industry. The moulding of a brick is a simple operation when compared to the complicated weaving of delicate fabrics or the making of a shoe.

The reasons for this slow development in clay working machinery are: First, the clay worker has not been willing to pay the price; second, the majority of the men who are designing and building clay working machinery are not thoroughly practical clay workers; i. e., men who have had broad practical experience in clay working operations.

Clay working machinery has not had the attention of that highest scientific and mechanical intelligence that has been put into such machinery as is required to operate modern machine tools and similar machinery. It is not designed and assembled with that care and attention which has been applied to the dynamo or the Corliss engine. To some it may seem ridiculous to make such statements about machinery for shaping crude clay into brick, but the time is coming when we will see some radical changes in the construction of machinery for shaping our clay into wares. First class vitrified front brick will be produced at very nearly the same figure as it is now costing to produce common stiff mud builders. When that time comes, the brick maker need have no fear of the concrete and cement block men.

President Pratt: The next paper is on the subject, "Manufacture of Hollow Building Blocks," by Mr. H. B. Fox, Monmouth.

### THE MANUFACTURE OF HOLLOW BUILDING BLOCKS

There are in this subject four topics to be considered; the clay, its manufacture into ware, drying of this ware and burning the product. The last three are of course dependent upon the first.

In selecting a clay for the manufacture of hollow building blocks and fireproofing, the physical properties of the deposit should be carefully investigated because upon the plasticity of the clay and its drying properties depend success or failure. Having once determined the material is plastic enough to be manufactured into thin walled ware, drying becomes the all important problem.

There is so little difficulty in the preparation of the material for the machine that I need not dwell upon that subject. The main requirements being uniformity of grain and absence of coarse particles that are likely to give trouble at the die. Added plasticity may sometimes be given in the preparation by the use of wet pans or by weathering. As a general thing, however, dry pan gridding or dry pan followed by wet pan will be found most satisfactory.

The jugging whether by wet pan or ordinary pugmill must be thorough and uniform.

The machine may be of the ordinary stiff mud brick type but it is preferable that it should have some arrangement for providing a clay cushion between the point of the augers and the front of the die. In our machine we are now using augers with three wings instead of two as on the old type. The three winged auger produces a more even pressure around the outside of the bar and permits of the use of a thinner cushion between the augers and the die nozzle.

The manufacture of hollow blocks presents at the machine many more difficulties than do ordinary brick and drain tile. In this work all endeavor is bent toward running the bar of clay without strains. I may, perhaps, be pardoned if I pause here to point out some of the stumbling blocks. The dies, of course, must be set for the most perfect conditions with the result that any unevenness in tempering sets up strains that results in checked ware in the drier even though the cracks do not appear at the machine. The dies must be nicely proportioned. If the cores are too short, the clay will not weld after passing the bridge, if too long they are



flexible and produce unevennesses in thickness and often completely break the bar. If the cores are not properly tapered, the clay breaks in passing the shoulder and is not again properly united. There must be just the right amount of lead given the bottom of the bar over the top and sides and the exact proportioning of webs to exterior walls. The importance of this phase of the work was well expressed by one of our pioneer fireproofing men when he said, "if you are having trouble with your ware, look to your dies." All dies should be designed with allowance for adjustments at all possible points.

Many as the difficulties are in the manufacture, it is probable there are few clays that cannot be molded into ware; but there are many clays that cannot be dried in the form of hollow ware with the speed demanded by the equipment permissible for most plants. In discussing this subject of drying I shall confine myself to the method known as progressive, waste heat drying. Given the equipment necessary for producing the required temperature and circulation, the problem becomes one of control. This in the case of solid brick is a comparatively simple matter but with hollow ware it is not so easy to say the least. The main troubles here are the size, shape and structure of the individual pieces. The larger the more serious the problem. We know that flowing like water, it seeks the channels offering least resistance. If we could make the cars with their loads of ware exactly fit the tunnels, we should have removed at least one difficulty—the tendency of the air to run along the tops, sides, and beneath the ears. With tender clays or those with high shrinkage, these currents are sufficient to cause breakage by warping and irregular drying. Nor will curtains placed at intervals overcome this difficulty. The air will flow under and around them as water over and around obstructions in its current. Another difficulty is found in the cross webs within the blocks. Care must be taken not to dry the exterior too rapidly for those webs or the latter will break because of this shrinkage after the walls have set. There is, also, a very close relation between the plasticity and strength of the clay, the porosity of the molded ware, and the rapidity of drying. The more plastic the clay and the greater its strength the more easily it can be shaped into ware and the more safely it can be handled. These things are of themselves much to be desired but here again we must be careful. The greater the plasticity and ordinarily the strength, because these things usually go together, the finer must trim our course between the two. Nor must we forget that with hollow ware containing cross webs this difficulty is much more serious than with tile or brick. It will be found that the kind of clay best suited for this kind of ware is very rare as it should at once combine high plasticity and good strength with low shrinkage and coarseness of grain. To return to the dryer itself, much loss could often be avoided if greater care were taken to know the conditions prevailing there. There is no longer excuse for a man saying, I guess the conditions in the dryer are so and so. Any man of ordinary intelligence and by the expenditure of a small amount of money can know. Instruments for determining temperature, relative humidity and velocity of air currents are not expensive and are always reliable. It is certain that different kinds or sizes of ware require different conditions for successful drying and the only way to be sure of these conditions is to measure them and make them most suitable for each kind of ware and each time that ware is made to make them the same.

The burning is done in round down draft kilns. Our kilns with one exception are provided with open slant grate fire boxes in which we burn mine run coal. I am at present carrying on some experiments in burning, looking to both fuel and time economy but have not gone far enough to give results. We have thus far only used two methods of

firing. In the first the heat was gradually raised from water smoke to finish, the process going slowly enough for oxidation to be finished before vitrification began. In the second method, after water smoking, the heat is raised rapidly until the ware becomes bright red, or to about 1400° F. Pause is made here until oxidation is complete when the kiln is pushed to finish. As already stated, I am not, yet, able to give results but so far as we can tell the latter method saves us about 15 per cent of the actual time of burning and nearly the same percentage of fuel. We control our burning entirely by the use of the electrical pyrometer but finish by the use of that instrument in connection with Seger cones and try pieces. The great benefit derived from the pyrometer is the complete control it gives the fireman over the heat in his kiln.

Little need be said of the finished ware. Soundness and the right degree of hardness being the prime requirements. Color rarely plays much part because of the fact that at least 95 per cent of the ware sold is used for backing and interior work where it is covered.

President Pratt: This ends our papers and we will now hear from Mr. Joannis, Chairman of the Committee on Resolutions.

Mr. Joannis: The report of the committee is divided into two parts. I will read Part I of the report:

#### REPORT OF THE COMMITTEE ON RESOLUTIONS PART I

*Resolved*, That the Illinois Clay Workers' Association appreciates the courtesy extended to it by the Promotion Club of Peoria for the interest taken in the members attending this convention at this time and special thanks be extended to Mr. C. S. Burdick, secretary of the Promotion Club, who in song, story and steam contributed so much to our enjoyment.

*Resolved*, That the Illinois Clay Workers' Association extend to the brick manufacturers of Peoria their hearty vote of thanks for the hospitality which has been shown to the convention during its stay in that city. The committee further requests the co-operation of the Peoria clayworkers at future conventions.

*Resolved*, That the Illinois Clay Workers' Association express itself in the most emphatic way as to its appreciative recognition of the valuable assistance given to it by the Ceramic Department of the University of Illinois, and that Professor A. V. Bleninger receive our special vote of thanks for his work, and also that he be appointed a messenger to carry to the university our assurance to them of our constant and loyal support.

*Resolved*, That the association express its gratitude to those who have contributed to our program, special mention being made of the non-members of the association, W. H. Fitzpatrick of Washington, D. C., and Walter H. Kirk, attorney and counselor of Peoria, because of their very valuable papers and manifest interest in our welfare.

*Resolved*, That the members of the association extend their thanks to the officers of the association for their valuable and faithful services during the past year.

*Resolved*, That in view of the fact that the present name of the association is subject to constant misinterpretation, the name of the association be changed from "Illinois Clay Workers' Association" to "Illinois Clay Manufacturers' Association."

It was moved and seconded that this part of the Report of the Committee on Resolutions be accepted as read. Motion was carried.

Mr. Joannis: Part II of the Report is subdivided into A and B. I will read Section A of Part II.

#### PART II, SECTION A

*Resolved*, That this Association appoint a Committee of Publicity for the evolving of a definite plan whereby greater

publicity can be given to the value and adaptability of all clay products to national needs, and that the secretary of the association be instructed to communicate with the state and national associations, requesting them to appoint similar committees with the ultimate object of a General Bureau of Publicity for all clay-product representation.

Mr. Mamer moved the adoption of the report just read, which motion was seconded by Mr. Hammerschmidt and carried.

Mr. Joannis: I will now read Section B of Part II.

#### PART II, SECTION B

*Resolved*, That the secretary be empowered to issue in pamphlet form the best papers presented to the association upon request by members who desire to purchase them in quantities for distribution.

*Furthermore*, That all literature so issued shall bear on its face a distinctive mark which shall stamp its identity as a product of the Illinois Clay Manufacturers' Association.

*Resolved*, That we make a recommendation to the executive committee of this association that the next meeting be held either in Urbana or Champaign, according to that committee's discretion, and that the sessions last for three days, the morning sessions being taken up by the regular program of the association and the afternoon sessions being dedicated for instruction to the members of the association by the Ceramic Department of the University of Illinois.

(Signed) HARRY DE JOANNIS, *Chairman*.

ALBERT E. GILES,

FRED TITTERINGTON.

It was moved and seconded that Section B of Part II be adopted. Motion was carried.

President Pratt: The next on the program is the Report of the Treasurer, William Hammerschmidt, of Lombard.

#### REPORT OF TREASURER

Balance on hand.....	\$ 23.17
Dues for 1908.....	92.00
	<u>\$115.17</u>

#### EXPENDITURES.

Transportation and typewriting..	\$ 18.00
Postage .....	19.00
Circulars .....	2.25
Programs .....	5.50
Letter Heads and Envelopes....	4.25
Circular Letters .....	5.95
Badges .....	15.25
Telegrams .....	1.05
Entertainment (estimated).....	40.00
	<u>\$111.25</u>
Balance on hand.....	\$ 3.92

Mr. Hammerschmidt: The members will notice in this report that Secretary Hartwell had to cut out his salary.

It was moved and seconded that the report of the treasurer be accepted and placed on file. The motion was carried.

Mr. Mamer: I move that we give Mr. Hartwell a special vote of thanks for cutting out his salary. The motion was seconded from various parts of the hall, and was carried unanimously.

#### REPORT OF COMMITTEE ON NOMINATIONS

Your Committee on Nominations hereby nominate the following persons for the officers of the Illinois Clay Workers' Association for the coming year:

For President—William Hammerschmidt, Lombard.

For Vice President—F. R. Carter, Peoria.

Secretary—Geo. H. Hartwell, Chicago.

Treasurer—J. H. Mamer, Campus.

Respectfully submitted,

L. SOLFSBURG, *Chairman*.

D. C. HAEGER,

N. W. GATES,

Mr. Solfsburg: I move that the President cast the vote of the Association for the officers nominated. The motion

was seconded and carried and President Pratt declared the new officers elected.

President Pratt: The next will be the installation of the new officers. Will Mr. Hammerschmidt step forward.

Mr. Hammerschmidt: Members of the Illinois Clay Workers'—now Manufacturers'—Association: I thank you for this honor. I hope that all of you, and all the rest of the Clay Workers in the state will be busy and have ample success in the coming year. I shall try to do my part this year for the Association with your help. I shall try to be your servant as well as I know how. I thank you. (Applause.)

President Hammerschmidt: We would like to hear from the new Vice President.

Mr. F. R. Carter: Gentlemen: I thank you for the honor to which you have elected me and I thank you for holding the convention in our city. I hope that you have had a good time and a pleasant and comfortable time, and I hope to see you again another year, if possible. We will make it as pleasant for you as we can.

President Hammerschmidt: We would like to hear from Mr. Hartwell, who was re-elected Secretary.

Mr. George H. Hartwell: Gentlemen: I thank you very much for the honor you have bestowed upon me for the fourth time. And I want to thank you specially for the support that you have given me and I ask for that renewed support the coming year. I believe that we can get up an interesting programme for our next meeting, and make the meeting profitable to all the members. We have been very fortunate in the past in having able papers presented in clear form. I believe that the high quality of the papers has had much to do with the increase in our membership. We must not forget that "in unity there is strength." We should make an effort to bring other Clay Manufacturers into the Association and to the meetings.

President Hammerschmidt: We would like to hear from the new Treasurer.

Mr. James M. Mamer: Gentlemen, I have held a few offices in this Association in the past fifteen years that I have been a member, but this is the first time that you have ever thrust any real responsibility upon me. With all due respect to our outgoing Treasurer and our new President, I do hope that when I come to make up my report a year from now that it will exceed this last report ten fold. I also hope that every member will make it his particular interest next winter when the convention season approaches, to get as many of his associates as he can to come with him to the meetings. It is to the interest of every manufacturer to make this Association as large as possible and as widely known as possible. I hope that every one who has been attending these meetings in the past will try to do so in the future and bring as many more as possible. Gentlemen, I thank you.

Mr. Joannis: I advocated an increase of the yearly dues from one dollar to two dollars, which was strongly endorsed by the new Treasurer, Mr. Mamer. As an illustration of the need of increased dues I will cite the fact that the Secretary had to give up his small stipend of \$15 in order that the Association might not be in debt but could more than "break even" and had \$3.92 to its credit. He said that he had been secretary of various affairs and he knew the amount of work that a secretary does that no other members of the organization knew anything about, and to ask the secretary to do all this, the letter writing, the answering of inquiries, the arranging of papers, free gratis, was going a little too far.

The motion to increase the dues was carried.

Mr. Joannis: I move that the appointment of the members of the Committee on Publicity be left in the hands of President Hammerschmidt, to be announced later. The motion was carried.

This closed the 30th annual convention of the Illinois Clay Manufacturers' Association.

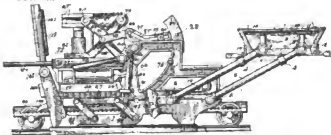
## CLAY RECORD.

## NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

872,333. Concrete-Molding Machine. Lewis D. Ewing, Akron, Ohio. Filed April 28, 1905. Serial No. 257,860.

In a concrete molding machine, the combination with a mold box of a hopper having adjustable sides and adjustable extension members, and provided with an extensible bottom.



The combination with the mold box of a concrete machine, of a hopper having its sides adjustable and provided with extensible bottom plates, and adjustable supporting oscillating arms provided with balancing weights for swinging the hopper to and from the mold box.

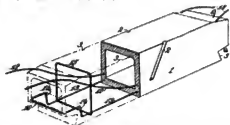
873,568. Method of Treating Brick. Augustus Magoon, Logan, Ohio, assignor of one-half to John W. Jones, Haydensville, Ohio. Filed Nov. 15, 1906. Serial No. 343,599.

The method of treating colored brick which consists in introducing a large volume of air into the kiln containing said brick when the kiln is at its maximum temperature to oxidize the coloring matter in the brick.

The method of treating colored brick which consists in introducing a large volume of air under pressure into the kiln containing said brick when the kiln is at a high heat and continuing such supply of air to oxidize the coloring matter in the brick.

873,595. Hollow Building-Block. Benjamin Cerutti, Habana, Cuba. Filed May 15, 1907. Serial No. 373,812.

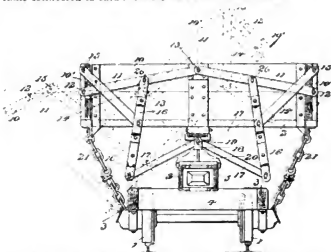
A hollow building block adapted to have its ends mounted upon supports and having its opening extending in the direction of its length, and a transversely extending frame embedded in the block and surrounding the opening at each end of the block in close proximity to the supports thereby reinforcing the ends of the block.



A hollow building block adapted to have its ends mounted upon supports and comprising transversely extending frames embedded in the block and surrounding the opening of each end thereof, longitudinal suspension cables embedded in the block, projecting therefrom, extending through and abutting against said frames, thereby preventing lateral displacement in one direction of said cables, said cables, in connection with the supports, sustaining the block, and longitudinally extending reinforcing members projecting through and abutting against said frames, thereby preventing lateral displacement of said members in one direction.

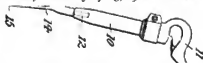
873,149. Dumping-Car. John H. Blake, Knoxville, Tenn. Filed Sept. 10, 1907. Serial No. 392,178.

In a dump car or similar structure, the combination of a body having a movable wall, a lever, and a pair of crossed links connected to said movable wall and to said lever.



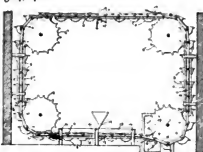
In a dump car or similar structure, the combination of a body having a movable and a fixed wall, a pair of toggle levers, a link pivoted at its ends to said movable wall and fixed wall respectively and connected at an intermediate point to one of said toggle levers, and a second link crossing and first-mentioned link and pivoted at its ends to said movable wall and toggle lever respectively.

873,200. Tool for Cutting Clay. Karl Busch, Grossalmerode, Germany. Filed July 13, 1906. Serial No. 326,016.



A tool for cutting clay composed of a pneumatic hammer, a handle on one end of the hammer, and a cutter removably secured to the other end of the hammer, the axis of the cutter being inclined to the axis of the hammer, substantially as specified.

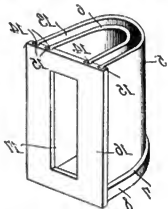
874,365. Conveyor. Samuel F. Joor, Morgan Park, Ill. assignor, by mesne assignments, to The Jeffrey Manufacturing Company, a Corporation of Ohio. Filed March 8, 1906. Serial No. 304,846.



In an endless conveyor, the combination with the chains, the freely-swinging buckets pivoted therein, the edges of adjacent buckets being arranged to overlap, and the turning wheels with which the chains engage where the direction of movement of the conveyor changes, of means carried by such turning wheels for preventing the buckets from interfering with each other and shifting the lap of the edges thereof as they move from one run to another, substantially as set forth.

873,634. Concrete-Tile Mold. William S. Thomas, Eaton, Colo. Filed March 18, 1907. Serial No. 363,080.

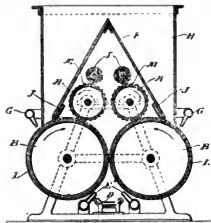
A mold including a vertically disposed supporting frame provided with spaced longitudinal dove tailed grooves, and substantially U shaped open ended shells having their longitudinal edges provided with corresponding dove tailed flanges adapted to slidably engage the grooves in the supporting frame and each provided at one end with a lateral off-set, the inner shell being spaced from the outer shell to form an



intermediate molding compartment and having its exterior walls provided with an intermediate circumferential rib extending laterally within the molding compartment and having its opposite ends terminating flush with the inner surface of the supporting frame, there being an elongated opening formed in the frame between the dove tailed flanges of the inner shell.

874,167. Machine for Molding Units of Clay or Other Refractory Material to be Used in the Manufacture of Concrete. William D. Crow, East Orange, N. J. Filed March 21, 1907. Serial No. 363,588.

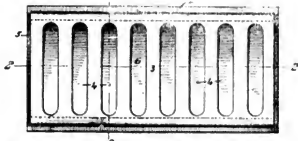
A molding machine, consisting of two parallel cylinders, concurrent depressions in said cylinders, two other cylinders mounted above and parallel with the aforesaid cylinders and



with each other, studs on the surface of said cylinders arrange so as to engage the depressions of said first pair of cylinders, a hopper arranged above all of said cylinders, a deflector in said hopper, scrapers arranged in said hopper to remove surplus material from the first of said pair of cylinders, lubricating jets mounted on said hopper, revolving brushes mounted above said second pair of cylinders aforesaid, a receptacle beneath said first pair of cylinders aforesaid, and dust jets arranged below said cylinders in the proximity of the said receptacle, substantially as described.

873,676. Tile. Patrick J. McGuire, New York, N. Y., assignor of one-tenth to Leonard J. McGuinness and one-tenth to Edward A. Schminke, New York, N. Y.

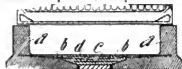
A tile having its rear face provided with rabbeted opposite edges with undercut grooves formed therein, an independent perforated backing-plate for said tile slidable in said grooves, and means interposed between said plate and the rear face of the tile for holding the plate in position.



A tile provided with guide grooves at opposite edges, a perforated backing-plate slidable in said grooves, a waterproof coating covering the rear face of the tile, and a curved spring plate acting as a shield interposed between said coating and the backing-plate for holding the backing-plate in position.

873,851. Sewer-Pipe. Carl Eschenbrenner, Oberlahnstein, Germany. Filed Aug. 30, 1906. Serial No. 332,584.

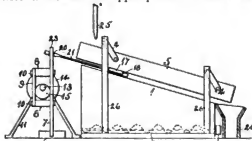
In the construction of sewers, the combination of the angular shaped abutment pieces *a* adapted to build broad and



narrow sewers, the iron toothed ribbons *b* projecting from a side of the angles of the abutment pieces adapted to lay in the intervening space breadthwise which are filled up with concrete *c* and bind and strengthen the sewer, the wire netting *d* laid in the intervening space lengthwise which is filled up with the said concrete and the beton plate which is used for covering the sewer, substantially as shown and described.

874,051. Shaking-Screen. Nimrod W. L. Brown, Thomasville, Ala. Filed April 18, 1907. Serial No. 368,970.

The combination of a sieve, means supporting the sieve in a manner to permit it to reciprocate, a vertically arranged bar having its lower end fixedly held in position, a link forming a connection between the upper portion of the bar and the



sieve, and an eccentric located intermediate the ends of the bar for positively imparting movement to the bar in both directions.

The combination of a sieve, a vertically arranged bar, means for imparting movement to the bar in both directions, and a link having one end connected with the sieve and its other end connected with the upper portion of the bar, the link having a thinner central portion.

## CLAY RECORD.

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Vol. XXII.

FEBRUARY 28, 1908.

No. 4

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

How easy it is to tell other its no use to worry.

Did you ever see a "boaster" looking for a chance to make good.

Paradoxical though it may seem, a man who lays up money salts it down.

Every man feels that a lot of greatness is concealed about his person waiting for the world to discover it.

Subscribe for the Clay Record today. Tomorrow never comes. We need the money just as bad today as any other time.

This issue of the Clay Record contains the fourth and last session of the Illinois Clay Manufacturers Association meeting. The papers read at these sessions should not be missed by any clay manufacturer who wants to be up-to-date. You can get these proceedings only through the Clay Record. Subscribe for it now.

The United States Steel corporation from operating only 28 per cent of its rolling capacity just following the panic has now come up to 51 per cent. Its officers have reckoned on practically a 50 per cent average in the first half of the

year and an advance in the second half to, say, 75 per cent.

While few of the steel companies have yet reached 50 per cent there has been an increase in working forces at a number of mills. Railroad financing will have much to do in determining the market of the next few months.

The lighter finished lines still lead in activity, but in structural material February makes a better showing than January.

The feature of the week was the placing of orders for steel rails, with many inquiries still pending. The principal orders were 45,000 tons from the Great Northern Railway, of which 20,000 tons goes to the United States Steel corporation, 10,000 tons to the Pennsylvania Steel company, and 15,000 tons to the Lackawanna Steel company.

## BUILDING OPERATIONS FOR 1906 AND 1907

Official reports from fifty-five leading cities of the United States, received by The American Contractor, Chicago, and tabulated, showing the building transactions of 1907 as contrasted with those of the preceding year, are presented herewith. These show a falling off, but not to a greater extent than was anticipated, particularly when the currency stringency that developed some three months ago shortened the money supply for building purposes and caused the postponement of numerous enterprises that otherwise would have been credited to the account of 1907. Nearly one-fourth of the entire loss for the year occurred in the month of December, and it is manifest that but for the shortage of money, with its depressing effects, the entire loss for the year would not have been great.

As it is, the showing is by no means bad, the transactions in the cities tabulated reaching the enormous total of \$580,492,196. As compared with the figures of 1906—\$667,032,499—this means a loss of \$86,540,303, or 13 per cent. This loss, while widely distributed throughout the country, is chiefly chargeable to a few large cities. Thus, in round numbers, the loss in New York is forty-three millions; twenty-two millions in San Francisco; eight millions in St. Louis and five millions in Los Angeles, a total of seventy-eight millions for the four cities. Chicago makes a comparatively good showing, with a loss of less than six millions, which, added to the four mentioned, very nearly accounts for the total loss. The percentage of loss in other leading cities is: Baltimore, 25; Buffalo, 3; Chicago, 8; Denver, 9; Duluth, 10; Kansas City, 10; Louisville, 47; Nashville, 26; New Orleans, 15; Philadelphia, 10; Pittsburgh, 13; Toledo, 27; Washington, 21. The following figures show percentage of gain: Cleveland, 22; Detroit, 7; Hartford, 9; Indianapolis, 5; Milwaukee, 18; Minneapolis, 6; Memphis, 14; Omaha, 6; Rochester, 9; St. Paul, 2; Seattle, 14; Spokane, 56; Salt Lake City, 86; Topeka, 49; Tacoma, 228.

Taking into account the unsatisfactory financial conditions that have prevailed during recent months and the circumstance that 1906 broke all building records, the showing must be regarded as decidedly encouraging, since, with lower prices for building material and the money stringency fast disappearing, quite a decided revival may be anticipated for the opening months of 1908.

## OBITUARY

David L. Davis, a retired potter died at his home in Waynesburg, Pa. He was born in Beaver County, Pa., in 1883.

William Finnegan, a retired brick manufacturer at Green Bay, died at his home of cancer of the throat. Mr. Finnegan was born in Pennsylvania in 1836.

Robert Dixon, a widely known manufacturer, died at his home in Pittsburg, Pa. He was 71 years of age and president of the Robert Dixon Fire Clay Co., at one time he was interested with his brother in the St. Louis Fire Clay & Brick Co.

## FIRE! FIRE! FIRE!

A \$2,000 loss occurred at the Mankins' Brickyard, Highland Springs, Va., no insurance.

The kiln sheds of the Troy (N. Y.) Brick company on Oil Mill Hill was destroyed by fire. The deep snow on the hill caused considerable difficulty in getting fire assistance.

The Summitville, Ind., plant of the National Drain Tile Co., Terra Haute, Ind., burned to the ground causing a loss of \$25,000; no insurance. The plant will be rebuilt at once.

The plant of the Louisville (Ohio) Brick & Tile Co., was destroyed by fire causing a \$25,000 loss, which is about covered with insurance. The plant will be rebuilt at once. The plant is owned by John and Mahlon Keim and Oliver Brumbaugh.

## ACCIDENTS, DAMAGES AND LOSSES

The property of the Eggers Brick Co., Cleveland, O., was offered at public sale by receiver Walter D. Meals, Feb. 21st.

The deadlock in the election of a trustee for the Montello Brick Works, Reading, Pa., was broken by Referee, S. E. Bertholet appointing Edward D. Trexler.

John W. Hull and W. H. Perkins have been appointed receivers of the Baltimore (Md.), Vitrified Brick Co., pending the selection of a trustee in bankruptcy.

Suit has been filed for a receiver for the Carter County Fire Brick Co., which owns 750 acres of fire clay lands in Carter County, Ky. Edward Painter and Joshua Homer were appointed.

Harvey A. Spencer lost in his damage suit against the Albert Lea (Minn.) Brick & Tile Co. The judge instructing the jury to bring in a verdict of not guilty. He asked \$25,000 for injuries to himself.

T. P. Williams, of New Castle, Pa., despondent over financial losses ended his life by sending a bullet through his brain. He was an alderman, 44 years of age and interested in the Sand-Lime Brick plant.

The Albion (Ills.) Vitrified Brick Co., has made a settlement with Mrs. James Gines giving her \$500 on account of the accidental death of her husband. The company has also offered Mrs. Montgomery a liberal settlement.

Mrs. Rebecca G. Graham in the Brooklyn, N. Y. court has moved to break the will of her husband, Charles Graham, formerly the president of the Williamsburg Pottery Works. He left an estate of \$300,000 to his son, giving nothing to the widow and a daughter.

## MANY ARE GIVEN WORK IN OHIO

Wellsville, O., Feb. 27.—Nearly all the industrial concerns in this vicinity have resumed operations after having been closed down for a number of weeks. The United States, Pioneer, Pattersons and the McNicol potteries have resumed, giving employment to over 750 men and women. The Wellsville plant of the American Sheet and Tin Plate company also has resumed, giving work to over 1,000 men. Extra labor is being employed at the Cleveland & Pittsburg railroad shop, and it is reported additional freights runs are to be posted within a few days to care for an increased freight traffic. Sewer pipe and fire-brick plants have started and this industry gives employment to nearly 500 men. Extensive railroad improvements have been started and this means that hundreds of laborers are to be put to work at once.

## MONTELLO REORGANIZATION

The reorganization of the bankrupt Montello Brick Works Reading, Pa. is being rapidly completed, and by immediate settlement with the creditors the court proceedings will be ended. A meeting to bring about this settlement will occur when Senator A. B. Roberts, the receiver, and the creditors, will confer. If the bankrupt proceedings continue creditors will receive about 5 per cent. of their claims, while if amicably settled the concern will yield 25 cents on the dollar. It is rumored that the Wyomissing and Montello plants and the Reading Shale Brick Works will join the Montello Brick company and will be run by Lambert A. Rehr. The Oaks, Perkiomeneu and fire brick plants will be organized into the Oaks Brick company, headed by Albert A. Gery. Common and preferred stock will be issued in place of the bonds of the U. S. Brick company. It is the plan of the companies to raise capital and begin operations in time for the spring building rush.

## PLANTS IN BIRMINGHAM REPORT GOOD DEMAND

Because of a decided improvement at Birmingham, Ala., in the demand for both building and paving brick, three brick works which have been idle since last November, were started again this week and preparations are being made to put others in operation.

J. R. Copeland of the Jefferson Brick company, which controls almost all the brick produced in the Birmingham district, is authority for the statement that there is more demand for brick right now than for seven months. A number of municipalities are asking for prices on paving brick and one concern is now producing that class of brick altogether.

Building operations in the Birmingham district are picking up so that there is need for many million bricks in the near future.

## SHAFTING SNAPPED OFF HIS HEAD

Jay Pooler, administrator of the John Pooler estate, received \$3,000 from the United States Gypsum company, Ft. Dodge, Ia., for the death of his 16-year-old son, John, who was killed last June when the shafting snapped off his head while he was working in the mill.

## CLAY RECORD.

**THE AMERICAN CLAY MACHINERY COMPANY ENTERTAINS N. B. M. A. MEMBERS AT BUCYRUS**

Two hundred representative Brick Manufacturers from all parts of the United States went into Bucyrus, Ohio, Saturday, Feb. 8th, on a special train run by the American Clay Machinery Company, which was host to the large party after the convention of National Brick Manufacturers association at Columbus. The company provided a special on the Short Line and entertained the visitors by showing them over the American plant and being their host at dinner at the hotels.

The brick makers took Bucyrus by storm and spent a pleasant and profitable day, inspecting the biggest brick machinery plant in the world. The American company offered them every facility for seeing how the brick making machinery is put together and practical brick makers were enabled to make a thorough inspection of every detail of the plant.

Immediately on arrival the visitors went in a body to the American plant. A trip through every department of the big shops, occupying almost an entire block, proved a source of pleasure to all of them. Men whose business in life is making brick and trying to make the best brick made, found here the machinery which is adapted to the needs of all classes of the trade under all conditions. No especial preparation had been made at the shop but here the guests found machinery in all the various stages of manufacture.

Veteran brick makers who have visited many plants, conceded the local plant of the American company to be the largest and best equipped they had ever seen. The latest models of augur machines, dry pans, cutters, re-presses and every class of machinery adaptable to the working of clay, was there for study and inspection. The offices of the company were also paid a visit and the office system explained.

Perhaps the most interesting feature to the visitors was the complete testing plant maintained by the company. The testing department was in operation and the guests wit-



**N. B. M. A. MEMBERS VISITING WORKS OF AMERICAN CLAY MACHINERY CO., BUCYRUS, OHIO**

A general invitation was extended by the American company to all members of the convention, asking them to be the company's guests at Bucyrus while they visited and inspected the local plant. A majority of the brick men accepted the invitation and the party, including about twenty ladies and a number of Ceramic students from the Ohio State University, came up on the special, running on a fast schedule. The Columbia morning papers were distributed on the train while everyone was given a small silk American flag as a souvenir. Accompanying and in charge of the party were R. C. Penfield of New York, president and general manager of the company; C. B. Sharer and F. L. Hoppley of the Bucyrus office; J. S. Hayfield, Columbus representative, and G. C. Stoll, in charge of the Chicago office of the company. They were joined at Bucyrus by Secretary R. O. Perrott, in charge of the plant.

nessed a fully equipped brick plant in full operation. They saw the clay when it first entered the machines, saw it delivered in proper shape to the cutters, then to the repress machine, coming out in finished brick, except for the burning. Samples of all kinds of clay from all parts of the world were exhibited, undergoing tests which showed what kind of machinery and what operations were needed for each particular kind. It was interesting to any and all of them to learn that tests are made of any kind of clay, to what use it could be put, and how it should be handled.

Out in the big erecting room, under the thousands of square feet of skylight, the party was gathered together while Photographer Dozer took pictures of the assemblage. At the noon hour, the guests were taken to the hotels where they were entertained at dinner, the party being divided between the Ellerson, Royal and Deal House. Carnations

were presented as favors and with the American souvenir watch fob, the silk American flag and a carnation displayed on the coat lapel, no one could mistake the American guests for members of any other gathering.

The brick men were anxious to get back to the plant and immediately after the noon meal, revisited the shops. About fifty of the visitors left for the east and west, via the Pennsylvania, late in the afternoon, while the remainder, who had return mileage from Columbus, to their homes, returned to that city on the American special train and departed from Columbus to their homes.

Bucyrus was very glad to have the convention members visit the city and they were all well pleased with their visit both to Bucyrus and to the American plant. All were much impressed by the extent and completeness of the Bucyrus plant of the American Clay Machinery company and both the citizens and the American company will be glad to have them all visit again, either collectively or individually, and bring their friends with them.

As the party boarded the special leaving for the south, Harry DeJoannis of Chicago, on behalf of the visitors, in a pleasant speech, warmly extended thanks to Mr. R. C. Penfield for the entertainment afforded the visitors while guests of the company.

#### HEADQUARTERS OF N. P. B. M. A. WILL BE LOCATED AT INDIANAPOLIS

The central office of the National Paving Brick Manufacturers' association, which has been located at Terre Haute, Ind., since the formation of the organization, four years ago, is to be moved to Indianapolis very shortly. The reason for this is that Indianapolis is more easily accessible to the members of the association, almost all of whom are situated east of the Mississippi. W. P. Blair will continue as general secretary of the association.

Mr. Blair is one of the pioneers in the field of paving brick manufacture. He opened the plant of the Terra Haute Vitrified Brick company across the river in 1844, at which time it was one of a very few similar plants in the country. Four years ago an association of all the manufacturers of paving brick in the country was talked of and Mr. Blair was one of the principal agitators. The association was formed and Mr. Blair has been one of the chief workers in it since that time.

The object of the association has been to spread information in regard to the proper paving of streets with brick. "We want everyone to know just how brick streets should be laid," said Mr. Blair, "because we believe that if the people see just how good they are they will want more of them, and it will be good for business. To that end we have put out about twenty different sorts of periodicals and pamphlets. To get these together we have hired the best engineers in the country to make experiments and go into this business of street paving scientifically. We have prepared a text book on the subject which has been accepted by over fifty technical schools in the country.

"The business of the association is constantly becoming more complicated and heavier, and at the annual meeting we decided to move the office to Indianapolis. When you consider that more public money is spent for street and road work than for anything else except education you will understand that an association which includes 85 per cent of all the paving brick manufacturers in the country has a busy office."

#### DEATH OF WILLIAM FINNEGAN

William Finnegan, former assemblyman of the First district of Brown county, Wis., and a prominent retired brick manufacturer, died at his home 502 South Ashland avenue, Green Bay, February 20th. The cause of death was cancer of the throat, which had been ailing him for the past eight months, but it was nothing serious until two weeks ago, when he was confined to his bed.

The G. A. R., of which he was a member, had charge of the funeral, the Rev. Knox of the First Presbyterian church officiating. The remains were interred at Woodlawn cemetery in the family lot.

Mr. Finnegan was born Nov. 2, 1836 in Philadelphia, and up to 1857 worked in a brick yard there, moving to Muscatine, Iowa, in 1858, and working on his father's farm until 1862, when he enlisted in Company F, 24th Iowa, V. L., under Captain Dimmit. He was taken prisoner in Louisiana and held until 1864, after which he went to Nebraska, and in 1870 started a brick yard. Two years later he moved to Ft. Howard, Wis., and started a small hand brick yard which he operated until 1880. In that year he built a modern steam brick plant on Duck Creek just north of Green Bay, and in 1891 built the plant No. 3 at Ft. Howard after selling the Duck Creek plant. In 1903 he sold this plant to Wm. Barkhausen who still operates it.

Mr. Finnegan was not only a popular Grand Army man but was also a member of the local order of Elks. He leaves a wife, two daughters and a son.

#### THE BRICK OUTLOOK

At the present time the outlook for the approaching brick season is not bright, and it is said that unless the building business receives a much greater impetus with the opening of spring than present indications point to, some of the local yards will not start up at all. Many of them, especially those allied with the Federal Brick company of Providence, have large quantities of last year's product still on hand and shipping orders are not coming in very fast. The Federal Brick company held a meeting at the offices in New Britain recently. The company is meeting its obligations with the local manufacturers of kilns reported last year as agreed, but they are not disposing of any great quantity of the product at present. Their contracts with the local manufacturers call for the moving of sufficient brick to permit of the operation of the yards without undue hindrance in manufacture and it now looks as if they will have a hard time in living up to this agreement although many of the manufacturers are not anxious to commence operations under the present condition of the brick market and the possibility of a poor building season ahead. It is understood, however, that the Federal company have agreed if necessary to move brick and store it elsewhere, provided it is not sold and shipped, in order to fulfill that part of the contract dealings with the agreement not to impede manufacture.

#### A LARGE CONTRACT LANDED

Pueblo, Colo., Feb. 20.—The Standard Fire Brick company of Pueblo, Colo., landed a contract for 500 cars of brick to be used in constructing coke ovens in Old Mexico. The contract was secured over a number of large Eastern concerns and is one of the largest ever taken by the local company.



### THE ATLAS COMPANY CHANGES CHICAGO MANAGER

S. A. Williams, Jr., who has for nearly ten years been connected with the Atlas Car & Manufacturing Co., Cleveland, Ohio, part of the time in the capacity of sales agent and traffic manager, has succeeded William Pike as the manager of the Chicago office and is now located at Room 613 Fisher building. The business of this company in Chicago and the northwest is growing so rapidly that it has become necessary to have an experienced car man in charge. The Atlas company manufactures a large line of industrial railway equipment, and electrically driven dump and transfer cars.

### SAFETY WATER TUBE BOILERS

Catalogue No. 60, has just been issued by the Murray Iron Works Co., Burlington, Iowa. It fully illustrates and describes the Murray water tube boiler; it shows how they are built; the different designs; of what material the construction and the class of plants that they are used in.

The company was incorporated in 1870 and for thirty-eight years has operated boiler and engine shops. The plant is fully equipped with the heaviest and latest patterns of tools and labor saving devices, so that they can turn out first class work.

They are strong financially and can fill any contract which they undertake.

### CHICAGO BRICK MACHINERY CO.'S CATALOGUE

The above named firm are now sending out their 1908 Supply Catalogue No. 8. It is the most complete catalogue of brick yard supplies that was ever gotten out by any firm in this country and is a very handy thing to have on your desk for future use. Yard supplies, contractors' supplies and engine room supplies are all illustrated and in many instances are priced so you will always have before you a price list without having the trouble of going through forty or fifty different catalogues to get the cost.

No machinery is shown in this catalogue except a few specialties in the way of preparing machines, etc. Write the Chicago Brick Machinery Co., 1308 Great Northern building, Chicago, if you want one of these catalogues.

### HOW TO READ PLANS

Many building mechanics are handicapped from getting more pay because they are unable to read plans and work from a drawing.

Of course the best way is to learn how to draw; but many mechanics cannot afford the time for the necessary practise. It is for these men that this book was prepared, as the author simply explains the meaning of the various lines, plans, views, elevations, sections, scales, blue prints, devices, symbols, etc., to be found on a set of plans.

Each subject is taken up and explained and illustrated separately, and then a full complete set of architect's plans for a frame house is taken up and explained so that the reader will be sure to understand how to read plans.

The book contains 60 pages (5x7 inches), 43 drawings in text, 8 large folding plates. Handsomely bound in cloth, and is sold at 50 cents a copy by the Industrial Publication Company, 16 Thomas street, New York.

### NEW PAVING BRICK PLANT

Within thirty days a new paving brick plant will be operating in Los Angeles, Cali. The company will be known as the Bituminized Paving Brick and Tile company, capitalized at \$40,000, later on the capital to be increased to \$100,000. The leading factors in the new concern, are J. Simons and E. O. Simons, of the Simons Brick company of this city. An addition to the Simons brick plant, to cost \$25,000, will be made at Simons station on the Santa Fe, where the new brick will be made.

At present and for a good while back, the Los Angeles Pressed Brick company has been the only concern making paving brick. It has enjoyed a monopoly of supplying paving brick to city contractors. As a result of this lack of competition street work has been held up owing to the inability of the contractors to obtain bricks. The Bituminized Paving Brick and Tile company claims that it will furnish a superior brick, made from a process of boiling the common clay brick in bituminized gum. It is also said that it will be able to furnish its product at a trifle under the present cost of paving brick.

### VENEZUELAN MAGNESITE CONCESSION

Consul Thomas P. Moffat, of La Guaira, reports a recent concession by the Venezuelan government, granting the exclusive privilege for a period of twenty-five years, of exporting magnesite found on private lands in the island of Margarita. The government is to receive 1 bolivar (19.3 cents) on each ton exported. It is estimated that the annual output will be from 12,000 to 15,000 tons. Work has been commenced on several properties, and shipments will probably be made very soon. A private contract is said to have been made between the grantee and an American company for the entire quantity exported.

### SANTA FE GETS BIG BRICK CONTRACT

The Santa Fe, which was instrumental in putting in the rate of 52½ cents per 100 pounds on brick from Brazil, Ind., to San Francisco, Cal., is reaping the benefit of its action, for 150 carloads of this brick have been ordered by the builders of the new Palace Hotel, and will be brought from Chicago over that road. The minimum carload weight is 50,000 pounds, which represents 7,500,000 pounds of Indiana brick to be used in the hotel.

Success in life is not only doing the best but making use of the best. No one rises to the highest in body, soul or estate by the use of substitutes. Only the standards endure.

### CLAY INDUSTRIES AT EAST LIVERPOOL WILL LOSE HEAVILY BECAUSE OF FLOOD

The crest of the flood in the Ohio river reached East Liverpool Feb. 17th, and caused a loss of probably \$20,000 to the potteries and other clay industries located along the river front. The Big Beaver river is falling and this will help the local situation. Much sickness is feared if the people who live in the lowlands move back into their flooded homes before the houses are allowed to dry.

## SAND OR LIME BRICK OR BLOCK NEWS

Bailey & Thada, Thornton, Ia., are engaged in making cement tile. All sizes of tile are made up to 12 inch.

The Hudson (Minn.) Hydraulic Stone Co., has been organized for the purpose of making concrete stone and brick.

N. W. Dunham, of Dallas, Texas, is the principal of a company which will establish a sand-lime brick plant at Ardmore, Okla.

The Monterey (Cal.) sand-lime brick factory located at Seaside, has started work in earnest, a new process of sand-lime tiling is now being made.

One of the thriving industries of San Antonio, Texas, is the San Antonio Brick Co., which makes 40,000 sand-lime brick daily. George H. Craft is the general manager.

Architect Phillip Dean of Wausau, Wis., is at the head of a company that will build a sand-lime brick plant at Wausau Junction. The capital stock of the company is \$35,000.

The Sand-Lime Brick Co., Camden, N. J., has been incorporated with \$75,000 capital stock. The incorporators are F. R. Hansell, John A. MacPeak and William F. Sidell.

The Mankato, Minn. Commercial club have before them the proposition of establishing a sand-lime brick works. Sands have been made into brick which are pronounced first-class.

A sandstone brick works is to be established at Vancouver, B. C. The equipment is to be furnished by the American Sandstone Brick Machinery Co., of Saginaw, Mich. Wm. C. Mercer will superintend same.

The Winchester Granite Brick Co., Winchester, Ky., are overhauling their plant and putting in some new machinery. They are expecting a big business this year. They sold 2,500,000 sand-lime brick in 1907.

Upon application of L. R. Gordon, receiver of the Lawrence Sand Lime Brick Co., New Castle, Pa., appraisers were appointed. There are \$11,000 in outstanding bonds and \$100,000 liabilities besides the bonds.

The property of the Composite Pressed Brick Co., Portland, Oregon, the plant located at Sellwood has been acquired by the Blue Diamond Pressed Stone Co., of which C. N. Sherman is president. The company is capitalized at \$100,000 and will begin work in March.

The Composite Brick & Tile Co., incorporated with \$200,000 at Oklahoma City, Okla., will soon begin the erection of the plant and will make concrete brick and concrete roofing tile, using natural gas as a fuel. R. E. Brownell is president, W. C. Burke, vice president, Clark Braden, secretary and treasurer and Charles W. Jones, general manager.

## BRICK MEN SECURE FIRST BRICK PAVEMENT FOR PITTSBURG

Brick men were elated at the Pittsburg, Pa., City hall when the first brick paving contract by the city was awarded. The mayor and public works director awarded a contract to pave Augusta street, Thirty-second ward, with firebrick, to cost \$104,400. Augusta street extends from Grandview avenue to Greenleaf street.

Modern street paving in Pittsburg heretofore has been limited to Ligonier block, asphalt and macadam. The paving of Augusta street with brick is somewhat of an experiment, and if it proves satisfactory many other streets in the outlying districts of the city will be paved with the same material.

## MISCELLANEOUS ITEMS

Mr. Strain has sold his half interest in the firm of Strain & Chrissinger, Mt. Pleasant, Iowa.

Will Stevens of Batavia, O., will have charge of the Williamsburg, O., brick works this year.

The Commercial Club of Barnum, Minn., has secured a brick yard for that place in the spring.

William Shaw of Des Moines, Ia., will be the new manager of the Grinnell (Ia.) Brick & Tile Co.

Wm. M. Reed has sold his brick and tile works at Princeton, Ind., to Thomas Reed, his father, at Petersburg.

The York (Nebr.) Brick & Tile Co., is building one of the largest continuous kilns in the state of Nebraska.

The Salem Brick & Lumber Co., Slidell, La., have received a contract to furnish some brick to the Panama Canal.

The Anderson Brick Works at Macon, Ga., has been reorganized into the Anderson Brick company, with \$6,000 capital stock.

G. W. Conklin of Mound City, Kansas, is considering the building of a brick plant at Wichita, if he can secure shale or clay of a quality good enough to make brick.

The Bureau of Manufactures of Washington, D. C., in inquiry No. 1920 ask to be placed in communication with American clay machinery manufacturers for Italy.

The Chicago (Ills.) Hydraulic Press Brick Co., has dissolved, returning its charter to the state. The plants which it owned are now a part of the Hydraulic Press Brick Co.

Messrs. Craig & Adams have found at Alice, Texas, some shale and their plant three miles north of town is ready to run on a small scale, if satisfactory a larger one will be built.

The interest of James K. Everson in the Everson & Ferguson Brick Works at Crawfordsville, Ind., has been sold to G. B. Tuckett by the guardian of Mr. Everson. The capacity of the plant will be increased.

The United States Brick Co., of Pittsburg, Pa., are considering the building of a paving brick plant at Shawnee, Okla. Engineers have tested the clays and state a \$75,000 plant will be started within 90 days.

The West Bay City (Mich.) Brick Co. has been sold to Albert McClatchy and A. I. Jacobs, who will put same into operation in the spring. The plant has been idle for two years. Many repairs will be made.

The Commercial Club of Mounds, Okla., will locate a brick and tile factory there, so as to secure cheap material. Tile Works has reopened same after making extensive improvements and has secured an order for 600,000 brick for Perry.

The Alezio (Ills.) Brick & Tile Co., at their annual meeting elected J. A. Wells, president; L. C. Schrader, vice-president; and R. L. Watson, secretary and treasurer. The capital stock of the company was increased from \$25,000 to \$35,000.

The Portsmouth (Ohio) Granite Brick Co., has been incorporated with \$100,000 capital stock. The incorporators are L. C. Turley of Portsmouth, Gus Perdue of Fire Brick, Ky., and William C. Halbert of Vanceburg. The plant will be built at Fire Brick.

## CLAY RECORD.

The Canadian Brick Co., Medicine Hat, Alta., have been incorporated.

J. W. Strain has sold his one-half interest in the brick and tile business of Strain & Chrissinger, Mt. Pleasant, Ia., to Howard Wils.

Ed. Norris of Homer, Nebr., recently made visits to the neighboring cities looking up the brick yard situation, with a view of locating.

Altus, Okla., is to have a new brick plant. The deal is financed by Texas parties and J. S. Mason has been chosen to build and put the plant in operation.

The Gratztown (Pa.) Brick Works is in full operation under its new proprietor, Cyrus Eckert of Connellsville. Both fire and building brick are being manufactured.

The West Bros. Brick Co., Washington, D. C., have under contemplation the moving of clay from the bank to the works by electricity or steam power and want information on same.

The Berg Brick Machinery Co., Toronto, Ontario, have been incorporated with a capital of \$250,000, to manufacture brick machinery, etc. The provisional directors include A. Berg; J. Berg and S. Berg, Toronto.

The Queen's Run Fire Brick Co., Lock Haven, Pa., has increased its capital stock from \$250,000 to \$375,000 for the purpose of building a new plant at Queen's Run and is now in the market for the machinery required.

W. H. Colby and James H. Boal of Mason City, Ia., visited Leligh last week, looking after the matter of starting work at the New Lehigh Clay Manufacturing plant. The plant will undergo extensions, repairs and rebuilding.

W. A. Bolender of Orangeville, N. C., is having his clays tested with a view of developing same.

The machinery of the Barrey Brick Co., Fowlertown, Ind., is being removed to Marion where it will be utilized.

R. H. Bethel has taken charge of the Charlotte (N. C.), Brick Co.'s plant at Grattan, S. C. and has moved his family there.

The National Drain Tile Co., will rebuild on a much larger scale the Summitville, Ind., plant which recently burned to the ground.

The Lexington (Ky.) Brick Co., has increased its capital stock from \$40,000 to \$75,000 and will increase the capacity of the plant.

The Hydraulic Press Brick Co., will install stiff mud machinery in their Porter, Ind. plant increasing its capacity very materially and requiring 50 more hands to operate it.

The Rapid City (S. Dak.), Brick & Tile Co., has decided to install new machinery throughout the plant and Guy Marshall the superintendent has been east to purchase same.

In connection with the Freeland (Pa.), Brick Works it is expected an organization will be formed and a charter applied for as a greater part of the stock has been applied for.

J. W. Colwell who has been connected with the Dickinson (N. Dak.), Fire & Pressed Brick Co., for several years, has accepted a position as manager of the Missouri Slope Brick & Tile Co.

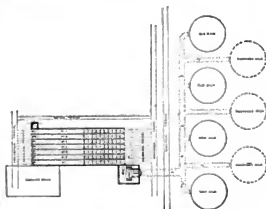
The Hamburg (Pa.) Vitrified Brick Co., is making preparations for early spring resumption of work. Power melting is now being added. The Mack Company of Philadelphia operate the plant.

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612 Victoria Bldg., ST. LOUIS f253 Broadway, NEW YORK f639 Bourse Bldg., PHILADELPHIA, PA.

A. Rousseau will engage in the manufacture of brick at Hardin, Mont., in the spring.

The Scioto Fire Brick Co., Sciotoville, Ohio, has resumed operations employing 150 men.

W. F. Leach of Shively, Ky., is organizing a company to establish a brick and tile works at Estherville, Ia.

G. W. Conklin of Mound City, Kansas, is at Ponca City, Okla., for the purpose of establishing a brick plant there.

A. M. Hull, has purchased a brick and tile plant at Jewell Junction, Ia., and A. D. Hull will have charge of the plant.

The Plymouth Clay Products Co., Lehigh, Iowa will build at once three more kilns so as to increase the capacity of the plant.

B. A. Stanford of Gainesville is at Wichita Falls, Texas, for the purpose of organizing a company and put up a first-class brick factory.

Ellis & Co., Canton, Ohio, have a large contract to make special paving brick that will require special machinery, to manufacture them.

The Diamond Fire Clay Co., Canon City, Colo., have increased their capital stock from \$60,000 to \$150,000. W. H. Tront is manager of the company.

The Alexis (Ills.) Brick & Tile Works which was closed down the greater part of last season will be reopened under the management of Roy Richardson.

J. B. Zorkman of Indianapolis, Ind., is a promoter who wishes to start a \$7,500 paving brick plant at Jasonville, Ind. The citizens are asked to donate only \$2,000 after the plant is constructed.

The Blakeley Brick & Terra Cotta Works, of which H. Schroeder is the manager is planning to enlarge the works. The company is installing a machine to make hollow brick and drain tile.

The Central Shale Brick Co., St. Louis, Mo., has been incorporated with \$50,000 capital stock. Stockholders are Charles E. McFwing, W. H. Allen, John D. Woodruff and Joseph R. Heckman, all of St. Louis.

The Concord Brick Co., Natchez, Miss., is building a fireproof structure on the site of the plant that burned some months ago. The plant will be equipped with most modern machinery and will be ready for operation in April.

The old Beem Brick & Tile Works at Lehigh, Ia., known as the Lehigh Clay Mfg. Co., is being reorganized and rebuilt. The officers are John L. Hamilton, president; A. D. Bailey, vice president; Wm. M. Colby, secretary; N. T. Tyson, treasurer and George H. Emery, general manager.

Herman Tillatzki of Big Stone, South Dakota, will shortly leave for Barnum, Minn., to start a brick yard.

The Stovall (N. C.), Brick Co., has been incorporated with \$7,000 capital stock by A. D. Burwell and others.

A brick manufacturing machine is being installed at Cortez, Colo., preparatory to making brick as soon as spring opens up.

The Crucial Brick Co., Rome, Ga., are now making 500,000 straw colored front brick daily. O. W. Fuller is the general manager.

The Weir City, (Kansas) Brick Co., has had samples of clay tested which are pronounced by experts to be first class and a large plant is proposed.

The Burke Brick Co., Ft. Smith, Ark., began the delivery of clay tested which are pronounced by experts to be first class and a large plant is proposed.

The Fitchburg (Mass.) Brick Co., has elected Frank H. Foss, president; F. C. Nichols, treasurer, and Robert Marcy, clerk. The company will begin the manufacture of brick at once.

The Briton (Mich.) Pressed Brick Co., recently held their annual election and with the dividends decided to build additional kilns and engage an expert brick manufacturer to take charge of the plant.

At the annual meeting of the Kreischer Brick Mfg. Co. in their New York office, Murray Androvet of Kriescherville, S. I., N. Y., was elected president, Albert Killmeyer vice president and Charles H. Pnls, secretary and treasurer. The plant is at Kriescherville, N. Y.

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Superintendents brick manufacturing plant; estimator fire-proofing; salesmen brick and sewer pipe; salesman terra cotta; bookkeeper, manufacturer; private secretary to manager; salaries \$1,200 to \$1,800. Other positions in our 12 offices open. Write for particulars.

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Where a country is tile factories are offered complete or in part. Cheap. Have several Brewer Mfg. for sale, and others.  
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One power Reprim, to number one condition, used only but a short time, capacity 10000 per day. Ask for full particulars.  
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Two American Clay Machinery Company's No. 23 combined brick and tile press with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Created bargain. Write for particulars.  
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Three two-press Whitteker pressed machines. Each machine is complete with counter shaft and ready to run. Condition good.  
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6200 soft pine pallets, each 30 inches long, 9 inches wide and 1 inch thick. Your pick of these pallets for six cents apiece F. O. B. cars.  
We also have several engines and boilers, heaters, pumps, and connections.  
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FOR SALE. CHEAP—New and re-laying rails, 12, 18 and 20 pound. For price, address  
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Containing about 20 acres of best clay without top soil perfect drainage situated midway between Baltimore & Washington with necessary railroad facilities. Plant was partly destroyed by fire. Two cliff mud machines engines, new steam plant in tunnel hot air drier with 20 steel cars (trackage and kilns remaining intact). Large house containing ground for superintendence. Purchaser could make this a modern fully equipped two machine plant for a little money.

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A practical Brick burner, state wages, experience to the  
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## FOR SALE

One Two Model Simpson Dry Press Brick Machine  
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One Clay Disintegrator  
One Clay Elevator  
One Clay Elevator  
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I have had twenty-two years' experience in fire clay, brick, hollow brick, building the gas retorts and in refractory. Understand making magnesite and silica brick; want position as superintendent.  
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Eight and left-hand One, Two and Three Way switches, of various gauges, radius and weight rails at special prices.  
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Drain Tile and Brick Plant, including sheds and Kilns and Acres of land underlain by limestone. Or will sell machinery consisting of one 40 horse power boiler one 30 horse power engine, one J. D. Fair Machine with dies to 12 inch one Raynold Disintegrator one Boring Automatic Tilt Machine one solvent brick table and dies one elevator. Carls, Trucks & Wheelbarrows, etc. Address  
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Must have A1 references, no other need apply. Address  
EDWARDS BRICK CO.,  
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A good, reliable man with experience, with some capital to invest in and take charge of a new dry brick plant. Plenty of shale, and good market for all the brick.  
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At Carthage, Ill., Hercules soft mud brick machine, 3 H. Madden & Co. machine for making tile and stiff mud brick machinery, sheds and kilns in good repair; 15 H.P. engine and 50-H.P. boiler, new. Address,  
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One Kells Brick Machine One No 1 Disintegrator for Horton Co. make One Semi automatic Side cut cutting table make One 40 horse power Gasoline Engine, Seventy five Bricks Mould, A1 in good condition. Address  
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A pug or temper mill, medium capacity in good condition. Give full description and lowest cash price in first letter.  
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In better order, ref. from  
30 and 36 1/2  
4 Wheel, \$1.00  
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Sold by all dealers  
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One-half the stock of successful incorporated dry-pressed red brick company, carrying with it position of secretary-treasurer of the company. Situated in Illinois in a fully equipped, new ranching, prosperous and has established and growing trade in adjacent territory as well as in Chicago. Present holder is in poor health and has other business. \$7,500.00 will buy half the stock, cash or negotiable paper. Excellent chance for good man. Holder of other half of the stock is one of the best-known brick makers in Illinois. Address, U. S. care Clay Record,  
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A 6-foot American Clay Machinery Co. Dry Pan in first-class condition. Will sell cheap to avoid moving.  
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Superintendent for building brick and drain tile plant. Must be well educated and capable of obtaining best possible results. Address station reference and salary.  
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Boiler, 50 tubes, 3 inches, 15 feet long by 10 inches horizontal.  
2 Steam Great Tempering Wheels, complete.  
2 Potts Disintegrator, 24 inch rolls.  
1 American Clay Manufacturing Co. Brick Slide Cutter.  
1 Correll Single Die Steam Presses, 15 M daily.  
1 J. C. Steele & Sons Brick Machine, Automatic Side, 10 M.  
1 American Clay Mfg. Co. No 10 Brick Machine, Automatic Rotary 20 M Side Cutter or End cut 10 brick capacity 100 M brick per day.  
1 Chambers Automatic End Cut Machine 30 M.  
1 Chambers Automatic End Cutting Machine 30 M.  
1 Richardson Double Die Presses, made by Ohio Ceramic Co.  
1 Martin Drag Belt Conveyor, 35 feet long 18 inch belt.  
6 Clay Bank Carts.  
12 Sets Carls Harnesses.  
12 Trucks.  
1 Ward horse power Side Valve Engine.  
Hider-Brickson Hot Air Pump.  
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1 Davidson Pump, 2 inch discharge.  
Address NEW JEWELL  
CARE OF CLAY RECORD  
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Piping, cars, track and foot pallets contained in a brick drier of seventy thousand capacity.  
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## WANTED

A traveling representative to sell Fire and Face brick.  
Face Brick care Clay Record  
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## SHALE CLAY FOR SALE

Have bed of red, chocolate and blue shales exposed full length of 3,500-foot railway cut and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow brick, brick, paving block, tile, sewer pipe, on river. Level ground for factory sites. Twenty-five acres for sale.

Write Iota-Urban Railway Co.  
Des Moines, Iowa.



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### REPORT OF THE THIRTIETH ANNUAL MEETING OF THE ILLINOIS CLAY MANUFACTURERS' ASSOCIATION

[The following article was written for the association by F. W. Fitzpatrick, consulting architect at Washington, D. C., and Executive Officer of International Society of State and Municipal Building Commissioners and Inspectors, and was read for the secretary by Harry de Joannis.

This article was considered, by all members who had the pleasure of hearing it, one of the most valuable ever read before the association, and it was ordered to be published in pamphlet form by Secretary Geo. H. Hartwell, so all clay manufacturers might benefit by it.

#### CLAY PRODUCTS VS. CEMENT FIRE-PROOFING

Frankly, I don't like the subject assigned me, or rather, the heading under which it comes is what displeases me. Either detail, the clay products, or cement-fireproofing, affords in itself a most fascinating theme upon which to dwell, but the "versus" is what riles me, for it implies a contention between the two, opposition, rivalry. It were better not so, but alas and alack, that *versus* and all it means is only too true.

Above all things am I a firm believer in the great economic principle of all things in their places and a place for everything. The *versus* already alluded to shows that there is an absolute contravention of that established principle. By the same token we might as well descend upon "hats vs. shoes" or "coats vs. pants." In both cases, either of the ingredients, as we might call them, is necessary and desirable and just the proper caper in its assigned place. The trouble would begin only when someone insisted in mixing them or in trying to replace the hat, for instance, with the shoes, and swearing that a fellow ought to wear the latter upon his head. So in this question. As far as buildings are concerned, the greatest industry in the world, concrete, and the cement products generally, have their place. It is an important one. The trouble and the "versus" began when the cement producers became avaricious and displayed an overweening desire to use cement for everything. No man believes more thoroughly in concrete than I do and none realizes its potentiality and possibilities more than I, but I also know that it has its limitations, and in all modesty I may add that no one has fought more zealously against the misrepresentation of its

qualities and the foolish endeavor of its exploiters to make it do duty for hat and shoes and coat and pants altogether.

To begin with, let us view the subject in its larger aspect, and when we speak of concrete, let us mean concrete-construction generally, and not merely that portion of it that some of its advocates call its "fireproofing qualities" in regard to the protection of buildings from fire and quite apart from its structural qualities. I think I can justify myself too in thus ignoring one of the material's chiefest virtues as claimed by its most ardent advocates.

Unlimited tests, common sense and close investigation of the material when actually under fire, satisfied me when still a very young man that concrete was only as fireproof as was its chief ingredient. The primal and best sustained claim for concrete is that it is an artificial stone. You all know what stone of any kind will do under fire. You have seen granite pop like so many firecrackers and under but moderate heat; you have seen sandstone spall and go to pieces under the same degrees of heat, and using as much mortar as you do you certainly are quite familiar with what limestone becomes under heat test. So it is with marble. And so also is it with concrete; if it is of limestone aggregate it will stand fire a little bit better than the straight limestone; if of granite it will also stand a little bit better than granite; if of brick, or broken tile aggregate it stands the best of any concrete, but yet vastly less heat than will the good, reliable, old, straight burnt clay itself.

At first the cement producers and other concrete advocates who, wanting everything to be of concrete (like the storied Maineite who wanted his porridge and his meat and his stewed apples and his salad all made in pie form) combated my opposition with the official dicta of Government engineers and other high authorities who pronounced without any equivocation that concrete was "fireproof." Later, Baltimore and then San Francisco and other things made these learned gentlemen think a bit more. And now it is a matter of some personal gratification to one so humble and modest as yours truly, who never has attained or even wished for the distinction of being an "authority," to have those same great ones

of the earth come out over their own signatures with the assertion that concrete is a most perfect structural material, but that it is *not* fireproof and ought to be protected from fire, just as is steel or any other structural material, by some incombustible and undamageable protective covering, preferably *clay tile*! So we may be perfectly justified in eliminating the word "fireproof," save in a very circumscribed degree, in what we say about concrete in this heart to heart chat.

No such comedown has ever been necessary in regard to the clay products. True, overzealous chasers of profit among clay producers have at times rather severely punished that material by making it too thin, underbaking it, or otherwise abusing it to the point of rendering it almost as ineffective as concrete when exposed to fire. But, per se, the material is unquestionably the most fireproof, the least damaged by excessive heat, of anything that has ever been known and used, or is known and used in the building trades! And it is not of yesterday or the day before. Like gold that has been the standard of value from time immemorial, so is burnt clay the standard material of imperishable construction. Go examine the ruins of ancient Greece and of Rome and you find monuments of stone and of marble crushed and battered and decayed and their dates a matter of question and speculation; but whatever you find of burnt clay is intact, clean cut, exactly as it was fashioned by the hand of the primitive clayworker, who, like you gentlemen, knew his trade well and wrought in imperishable metal. In Egypt, in Assyria, in Babylon we have even sun-baked bricks 3,000 and 4,000 years old and as good as new. The first Christian works were fashioned in the clay products and the art was carried to great perfection in the first capital of Christendom, Byzantium. And since that time, cavil and carp at that notion, as we may, we must concede that Persian art and then Arabian art (preserved to us, by a strange anomaly, by the so-called barbarian and all-destroying Moslem) has been the refining influence of our modern art. And the perfection of its expression is to be found in the sub-art of ceramics—the burnt clay products.

And right here let me say, before any concrete enthusiast makes the dab at me, that whatever of deterioration or ruin there may ever have been in the buildings of brick and of tile, of antiquity or of modern times, has never been caused by the disintegration or any inherent fault of the material itself but has always occurred through the failure of the binding material, the mortar, or, if our cement friends prefer it, the *cementing* of those parts together.

In some of their glowing advertisements and well written eulogiums of concrete those same enthusiasts point with pride to the noble Pantheon at Rome as the very apogee of concrete construction, the greatest piece of vaulting ever done in the olden times. It may be well to add, lest we forget, that the main ribs of that magnificent vault are built, not of concrete, not of stone, not of steel, but of a far more perfect material than any of these, BRICK. The whole structure, in its structural parts is of brick, and concrete is relegated to its true place in construction; it is used in masses, in the filling in, in the panels of that dome.

And in that same relation to the structure is concrete a most valuable material today, in masses. There is nothing better than concrete for foundations, for great piers under compression and buried deep in the ground where they are safe from fire; for piles drive into the bowels of the earth, for tanks and aquatic work, bridge abutments; street work; railroad work. But where you want to preserve a dry interior in a building, there is the place to use brick or hollow tile; where you want stability and thin floors there is the place for steel and hollow fireproofing tile; where you want light and fireproof partitions, there is the place for hollow tile; where you want beauty of external surface and one that will stand the ravages of time and fire and climate, there is the place to use brick; where beautiful relief is desired and ornate exterior, there use well-molded and well-turned terra cotta. And so with the roof of your building. What is there better than a roofing tile? And what is there handsomer, more subtly beautiful and so susceptible to artistic handling than the dainty colored and finely molded and softly glazed wall-tiles for interior decoration? But everything in its place is its shibboleth.

The claims of our too enthusiastic concreters and the hungry grasping of the cement manufacturers, clamoring for everything in concrete are foolish and ill-placed, but I likewise deplore the tendency of some manufacturers of some one clay produce or another who would have their material the only one used. The idea, for instance, that a hollow tile block can serve, not only as a structural unit, but also as a finished wall surface, as an ornament, as a roof, aye, even as the mortgage on a house!

If the concrete people could only stick together and establish some standard of construction, produce something like a uniform formula and be satisfied to thoroughly test their work and find out its merits and demerits before asking the people to accept their theories and to go on with important work according to this one or that one's pet notion, they could accomplish something like progress. As it is, most of the work they do can all be boiled down to the one maxim, let us call it, and that is to *sell cement*, regardless of the result. And what have we as a consequence? An endless record of collapses and dangerous, hazardous construction. Cinder concrete has been much advocated. It is the cheapest form of concrete on the market and disposes of as much cement as any other and at the same time, by its cheapness, makes it attractive to the business man, unversed in real values and believing that he can obtain for that lessened cost something as good as brick or tile. And it has been proven the most fire-resisting concrete—provided, of course, that it is absolute cinder, real slag, something that it is almost impossible to secure. Of course, if there is any unburned coal in it, something that happens nine hundred and ninety-nine times out of a thousand, it can not only be damaged by fire but actually burns. But here comes one of the latest and highest authorities on concrete who avers that cinder concrete deteriorates with age and he tells us that his experiments have decided him to never use coke-breeze or cinder "as one cannot tell, except upon analysis of every part of it, what impurities are in the material." Among the

tests that the same authority gives for reaching that conclusion is one where a cube of cinder concrete seven days old stood a crushing resistance of over 190 tons per square foot, and a similar cube one year old collapsed at 123 tons and a chemical analysis proved to him conclusively that the deterioration kept on growing apace. Other of their authorities find that the steel reinforcement buried in such cinder concrete soon becomes a victim to oxidation and ultimate total disintegration.

Have you ever found a brick, a tile or a piece of pottery of any kind, that, when once properly made and burned, deteriorated or disintegrated? No, as it is today, so will it be tomorrow and next year, yea and a thousand years hence. Fireproof? Why it's utter nonsense to call concrete that. Most of it loses over 50% of its efficiency in but 750 degrees of heat, and their highest authorities admit that it will, in nine cases out of ten, be utterly ruined in 1000 degrees. A figure at which your products, gentlemen, are just beginning to take form in their kilns.

But supposing by some accident or oversight a few bricks or tiles should be imperfectly burned and pass inspection and be finally introduced in a structure. That structure will not be as perfect, of course, as if every unit was of the highest grade, but one of the great beauties of brick or tile construction is the smallness of the units. Any one imperfect unit or even a unit entirely removed, can be replaced at any time and meanwhile does not actually imperil the whole or any considerable part of a building. Not so with monolithic concrete construction. Like a chain whose greatest strength is only equal to that of its weakest link, so must that concrete be perfect in every respect. The least little flaw imperils the whole; one barrel of poor cement; a little too much water or not enough, a neglected tamping, a removal of a center a little before time, any one of those can and does spell complete and fatal disaster. And any one of those imperfections is not only liable but almost certain to occur in every concrete building. The very nature of the labor employed would assure that. At its very best, labor of any kind is not perfect and in order to secure the cheapness the concrete people desire and boast of, they must employ the cheapest of labor, which also means the most inefficient.

In this assertion I have more than my own opinion to back me up. The United States Government, in a recent bulletin issued to the press officially, warns people against the too promiscuous use of concrete, particularly in inexperienced hands. And the greatest honor is due the author of that bulletin, the expert in charge of the Government tests of materials, who is himself a cement producer, for the manliness and frankness of his report. Writing of the various collapses of the year he says: "From what I have seen of other concrete buildings in process of construction, I am satisfied that the same errors are being repeated and that further collapses will surely come unless the officials of the cities take the question in hand now. This danger of careless construction confronts nearly every city of the country and it is a miracle to me that more concrete buildings have not collapsed." Strong words those, for a Government

official, and who is, at the same time, the President of a cement organization!

As an officer of the Building Commissioners' Association, I am giving that gentleman all the support he can desire in impressing upon the authorities of our cities the necessity there is to surround reinforced concrete construction with every safeguard possible, of inspection and tests, etc., to secure at least comparatively good work and a reasonable immunity from the fatal collapses that have prompted the leading engineering journal of the country to exclaim: "Carelessness, incompetence, and unscrupulous skinning appear to have about reached the limit in reinforced concrete construction. Two failures of large buildings under construction, occurring within a fortnight of each other, both of which had their harvest of dead, is a serious blemish on the record of reinforced concrete. A radical reform is imperative. The gray of our concrete structures is already too much stained with blood. Shall we allow that stain to spread and grow still darker?"

The work has not been without its results for our cities are beginning to see things in the right light and legislate accordingly. Awhile ago the concrete propagandists, having made most strenuous efforts to get everything their way, fairly gloated over the fact that architects and engineers generally were fast becoming staunch advocates of this or that system of reinforced concrete work, and the cities, being influenced by their architects and engineers, were leaning in the same direction. For awhile it actually looked as though this was indeed to be an era of concrete construction. But collapses and such concrete vicissitudes and better judgment have had their effect and a saner condition now obtains. New York's Building Code, for instance, says that fireproof buildings may go up to a height not exceeding 200 feet, but it limits buildings of reinforced concrete and of mill-construction to 85 feet. It must hurt the concrete folks to be classified with "mill construction" that is now universally accepted as obsolete, most expensive and senseless. The Building Code Commission also officially says: "Concrete construction has been given close study, the Commission, availing itself of lessons taught by the collapse of several buildings of this construction." Chicago has lately amended its regulations and is stricter in its supervision of concrete construction. Minneapolis has just passed one of the sanest of ordinances, that compels every owner of a proposed concrete building to place in charge of that work a specially trained and licensed inspector who is responsible to and reports direct to the city but is paid by the owner. It thus recognizes the hazard of concrete construction and places safeguards about it that are not required for any other form of building, thus also successfully barring the excessively "cheap" feature of concrete. Seattle, in a section that has gone almost solidly concrete, has just passed a new ordinance that recognizes the inferiority of that mode of construction by specially legislating as to its use, and limiting the height of reinforced concrete buildings to ten stories, or 120 feet, while it permits fireproof buildings of Class A to go up sixteen stories or 200 feet. And so it goes.

But, Mr. President and Gentlemen, and this is my preacher's "lastly," you have something to learn from our concrete friends; one of their virtues you might well emulate—their activity. You are satisfied and so am I that you have the best structural material ancient or modern science has been able to develop, but the layman don't know it. And seven out of ten of the architects don't know it. Who sells the goods today? Is it the merchant who buys the very finest things made and puts them in a store in some inconspicuous and remote corner of the city and sits down and waits for customers, or is it the chap who puts on a bold front, places



his goods in the finest emporium on the most prominent street and spends every penny he can borrow in advertising? Alas and alack, for the conspicuousness of some and the frailty of others, it is the latter gentleman who garners the shekels! True, the especially discerning, the connoisseurs, may find out something about the virtues of what the first one has to sell and he may build up a very select little trade, but his will never be a great mart of commerce. But back that man up with plenty of capital, put him in a fine store, advertise properly and he will simply wipe out all competition before him. He will not have to sell at the same prices as the other. People will come to recognize that his goods are the better and will pay him preferential prices. The illustration I think hardly requires further elucidation. You are too complacent, too satisfied.

The concrete people squabble among themselves and are ready to cut each others' throats on prices and everything else but they are banded together under one common banner "*Concrete*," and they wave mightily and are gradually working it up and up in the hope that it will some day surmount the tallest pinnacle and dominate the structural world. You cannot be blind to the fact, too, that they have gotten it pretty well up on the staff. Do you ever pick up a newspaper without reading something about concrete? How many architects are there who have been converted to the cult? The average builder thinks he sees a pretty wide margin of profit in handling the new material and he, too, is enthusiastic about it. Result; a few years ago there were a few hundred thousand barrels of cement made and used in this country, today we tell the story in almost as many hundreds of millions.

Smug complacency and satisfaction must be set aside and earnest co-operation and great activity must take their place. Look over your architectural and building journals and you will see sufficient cause to awaken you. The concrete people take up a vast deal of space with advertising and the influence of the business office is felt in the editorial room. True, you have your own splendid journals, the *CLAY RECORD*, the *Clay Worker*, *Brick*, *The Brickbuilder*, and so on, but they don't reach the layman, and in the final analysis you will find it is the layman who directs what his building shall be, how it shall be constructed and of what material. If he has been impressed by the concrete people and suggests concrete to his architect, you will find that the latter gentleman, even if he has predilections towards your materials, will run along like a good little boy and build of concrete. It is imperative, it is necessary and the time to do it is *now*; you must stick together; you must do *your* part in educating the people in the direction they ought to travel: if you believe in the clay products, you must *make* the layman see the point, too. Advertising in the regular way and all that sort of thing has its virtues but you must join hands in working a larger and more comprehensive field. You must go into a campaign of education on the broadest lines and in a general way and at the same time present your claim in its most attractive form to the individual who intends to build. Something has been done in this line but only in a small way, the ground has hardly been prepared even, there is yet much fertilizing to do and a heap of sowing—but mark my words, if you do it properly the reaping, the harvest, will well repay your every effort.

Mr. Deed: I don't believe that we ought to let this drop. I am not a Clay Worker myself, but I do believe that it is in the interest of Clay Workers wherever they put up a building, to get that advertised in the papers. Mr. Hartwell, Mr. Joannis or Mr. Randall will be glad to give you space. Get photographs and send them in.

Mr. Blair: I don't like to let that paper go out without saying something. I think it is one of the best for discus-

sions—the latter part of the paper—one of the very best discussions of this question that is asked: Are We Awake as to Advertising our Clay Goods? That has been passed over. But the criticism has been made very largely and I think we are very justly criticised by the suggestions in the latter part of that paper with reference to that. There is very little effort being made, and very little effort ever has been made by any of the Clay Workers, so far as building brick is concerned, toward persuading the further use of brick. If your neighbor, or if perchance your architect concludes by himself, without any argument or persuasion from you, to build a brick house instead of a frame house, after he has come to the conclusion himself, you are then at the threshold. I believe that the Clay Workers in this country ought to impress themselves upon the public and be after the man who proposes to build, and encourage him to build out of clay products. I believe that ought to be done in various kinds of ways. I am a believer myself in the association of interests in this behalf, and I have become much more convinced of that within the last year or two than ever before. I know that most of you are aware that so far as the paving brick industry is concerned, we have an organization something along that line. Not to wait until some city or some town or the people upon some street conclude to pave with brick, but go after the people in that town and upon that street and persuade them that paving brick is the best material out of which they can construct their street. And we can go further than that. We undertake to advise them as to how they shall build. Now I undertake to say, gentlemen, that if it were possible to accomplish this sort of thing that is exemplified by the City of Washington in this country, that the use of clay products would be much more extended. It is a fact that Washington, D. C. affords the best example of masonry work of any city in the world. They have no ordinance that refers to the construction of brick buildings in Washington, but yet it is scarcely possible to construct anything else. And why? Because they have the most artistic examples of brick in the world. If we can set the example by persuasion, by advertising, by a collected and united effort for the use of clay wares in the different cities of this country, our markets would open wide for us and it would be a different business from what it is today, to the extent of the second and third and fourth fold more than it is.

Mr. Joannis: I think there should be some kind of a motion presented to the Association, that the Secretary be instructed to send a vote of thanks to the author of that paper, Mr. Fitzpatrick, and our appreciation of it. I make that as a motion.

The motion was seconded by several and carried unanimously.

Mr. Blair: I would like to say one thing more on this subject, if I will be excused by the members. I want to say right in connection with this advertising and this promulgation of the use of our ware, that so far as the manufacturers of paving brick are concerned, that we help each other. And I am going to say that the members of this Association who wish to benefit their own communities and their own towns as brick makers—even though they are not interested in paving work—ought to help each other all they can. I am going to ask you to help us to this extent: All over the State of Illinois the influence of the brick makers may be felt in trying to get your streets constructed as they ought to be. The National Paving Brick Manufacturers Association are trying to give directions that are right and along that line, and if in these communities this question comes up, if you will take the time to send word to me for directions of that sort, why I certainly shall be pleased to send them to you whenever you want them, and as many as you want of them.

## ANSWER TO DISCUSSION ON THE VALUE OF AN ECONOMIC POWER PLANT\*

BY WILLIAM SIMPSON

The discussion following the reading of the paper, "The Value of an Economical Power Plant," at the first session of the Peoria meeting of the Illinois Clay Manufacturers Association, brought out many points worthy of consideration and comment on some of the expressed opinions is perhaps appropriate at this time. Mr. Purington was justified in stating that he could not afford to "monkey" with gas producer engines after his experience in making gas for burning brick. The manufacturers of this type of prime mover base their guaranteed fuel consumption on good anthracite coal, such as is not found in Illinois, and only in very rare instances have installations of this kind been successful when soft coal has been used. The producer gas engine is yet in an experimental stage and only under ideal conditions, which exist in very few plants, can the guarantees of low fuel consumption be fulfilled. In any case its value under any condition in a clay-working plant, is doubtful on account of the necessity of a boiler for other purposes. Mr. Pratt's experiences during his investigation of gas engines was no more than could be expected and proved conclusively that the engine is yet in the early stages of development.

The discussion on the relative economy of the Corliss and slide valve engine was clearly in favor of the former type. There are many reasons why a Corliss engine is more economical and efficient under average working conditions than any other kind, and as a result it has always been considered the standard of economical engine performance. The entire separation of steam and exhaust valves is one of the principle sources of economy in this engine. This feature prevents repeated heating and cooling by alternate passage of live and exhaust steam through the same ports. Low clearances are also an important point. The theory of an economical steam engine is in utilizing, as much as possible all of the energy in the steam before it leaves the cylinder. Steam distribution means admission, release, cut-off and compression and these points should be as near perfect as possible. They can only be accurately calculated by the use of the steam indicator.

Some members of the association asked why Corliss engine manufacturers did not equip all engines with double eccentrics. It is not necessary if the rated horse power of the engine is sufficient to meet all demands for power or if the load is constant. The required horse power should be developed at the economical point of cut-off, which varies with the different classes of engines, conditions and steam pressure. Of late years the demands on engine builders has greatly increased for units intended for heavy and sudden overloads, such as electrical installations for railway service, rolling mills, etc. This has necessitated engines equipped with double eccentrics and they should always be specified if there is the slightest chance for the engine being called upon to carry any overload. As a general thing it is impossible for a Corliss engine to cut off later than half stroke when operated by a single eccentric. When two eccentrics are used, one for

the admission and one for the exhaust valves, the cut-off can be made much later if necessary. Standard engines for ordinary power transmission by belt or rope are seldom equipped with double eccentrics unless specified. The extra service the engine is capable of performing when equipped in this manner is well worth the small additional cost usually asked by engine builders for a double eccentric valve gear.

While the Corliss is a four valve engine it is different in many ways from the so called modern "four valve" engine. The latter is controlled by an automatic shaft governor acting directly on the rod operating the admission valves, while a Corliss engine is equipped with a fly ball governor. The use of vacuum dash pots on the Corliss for closing the steam valves is another point giving the advantage of a quick cut-off, but also prevents the Corliss engine from being operated at as high a rotative speed as a "four valve." The travel of the exhaust valves is constant in both types.

A Corliss gear requires time to act and a great many authorities do not advise running over 100 revolutions per minute. The speed of the engine should depend entirely upon the length of the stroke, keeping as near as possible to 600 feet per minute piston travel. Eight hundred feet per minute is considered the maximum, consistent with good practice, but the engine will be more efficient and give better satisfaction if the travel is kept near six hundred feet per minute. The stroke of the "four valve" is usually shorter than a Corliss and this fact, together with difference in valve mechanism admits of the higher rotative speed of the "four valve." Slow speed means longer life and under the same conditions the "four valve" will seldom equal the Corliss for efficiency or economy.

It is pleasing to note the sentiment among clay-workers in favor of the return tubular boiler. Under the same working conditions it is fully as economical as a water tube boiler and possesses the decided advantage of being easier handled. It is much simpler in construction and its reliability has never been questioned, especially when constructed according to the specifications of any reliable insurance company accepting boiler risks. Of course a water tube boiler possesses advantage under certain conditions, particularly when operating continuously under a very high pressure. They are theoretically safer than a return tubular; not because of any superiority of workmanship or material, but mainly on account of multiplicity of parts. Its first cost is much more, but for ordinary plants this increased expenditure is not justified by any economical or efficient results.

Any type of boiler to be successful requires intelligent care and close attention to details. Careful firing and a knowledge of the necessary requirements of perfect combustion will go far toward increasing the life of the boiler and decreasing the fuel bills. Too much cannot be said of the necessity of keeping a boiler clean and free from scale. A good open feed water heater will do wonders in this direction and will remove from the feed water the greater portion of the impurities by which scale is formed, such as carbonates of lime, magnesia, etc. The heater should in all cases have ample capacity or its efficiency will be very materially reduced. It should be cleaned often and a renewal of whatever material is used in the filtering chamber should be frequently

\*The paper to which this discussion refers was published in the January 15th issue of the CLAY RECORD.

made. Of course, there are certain impurities, such as sulphates, that cannot be precipitated or held in suspension through the action of the exhaust steam. These, however, are in the minority and water containing them is usually chemically treated or the remedy applied in the shape of a boiler compound. Remember scale is a poor conductor of heat and will not only injure the heating surfaces by rendering them liable to burn, but will be the direct cause of an increased fuel consumption. In addition to keeping boiler free from scale as possible, the tubes and flues should be frequently cleaned, depending upon the fuel used and the nature of the water. If the heating surfaces are allowed to become covered with a thick coating of soot, it will greatly effect the economical operation of the boiler. The importance of a *good open* feed water heater of ample capacity cannot be exaggerated. By utilizing the exhaust steam from the engine or pumps, the feed water can be heated to a temperature of 204 to 210 degrees Fahrenheit. This is worth serious consideration when we find that statistics prove that about one per cent in fuel is saved for every ten per cent the water is heated above 70 degrees before being pumped to the boiler. In addition to this the exhaust steam condensed in heating the water is fed to the boiler in a purified state which is usually a decided advantage. Only a portion of the exhaust steam is condensed in heating the water, the balance passing off from the heater in a purified state and fit for any other use such as heating system or for manufacturing purposes. Most heaters are equipped with oil separators, but as a rule they are not very efficient, being only a set of corrugated baffle plates. The best plan is to put a good oil separator of ample capacity on the exhaust line, so that the steam can pass through same before entering the heater.

It is generally conceded that the open type of heater is the best as the closed type has no provision for the precipitation of impurities. This type has usually a series of coils through which the exhaust steam passes, the water to be heated surrounding the same or vice versa. These coils or tubes often become clogged and unless the water is pure or nearly so the open type of heater is to be preferred.

#### TESTS ON SAND LIME BRICK

The comparative tests made at the Underwriters' Laboratory in Chicago between clay brick and sand-lime brick have been completed. Engineer Robinson, assisted by George Riddle, conducted the tests. A committee on behalf of the association, consisting of H. O. Duerr, Professor Ira Wilson of Columbia University, and Dr. E. W. Lazell of the H. S. Spackman Laboratories witnessed the tests. The sand-lime brick from the various factories were built into the panels with fire brick and other classes of brick, and the same were subjected to a very high temperature, and while in a heated condition the water from a hose at thirty pounds' pressure was played against the panels. The behavior of the sand-lime brick under such severe conditions was equal in every way to that of the specimens of very high-priced clay-brick. The members of the association committee expressed themselves as highly gratified with the results obtained in this test. A report in detail will be prepared and printed provided the association members and other manufacturers indicate a desire to order the report in sufficient quantities to guarantee the cost which would, of course, be nominal in the event of any considerable number being ordered.

#### SUGGESTED TEST SPECIFICATIONS FOR BUILDING MATERIAL IN THE FORM OF BRICK\*

The product shall be subjected to the following tests: Absorption, freezing and thawing, fire, transverse and compression, and the weight per cubic foot and specific gravity determined. Additional tests may be called for when in the judgment of the Underwriters' Laboratories, Inc., it may be necessary.

All tests are to be made at the Underwriters' Laboratories, Inc., at the expense of the applicant.

##### SELECTION OF SAMPLES.

For the purpose of the tests at least 65 samples, representing the ordinary commercial product, shall be provided.

They may be selected from stock or taken at such stages after manufacture as may be desired by the collector, or made in the presence of the collector at his discretion, but in no case shall the samples be more than twenty-four hours old when taken. The samples shall be approximately 8 inches long, 4 inches wide and 2 inches thick, and in all cases shall be the size of the commercial product.

Information regarding the character and treatment of materials used, the method of manufacture and also samples of raw materials, shall be furnished the collector, if required by the Underwriters' Laboratories, Inc.

The samples shall be tested between the thirtieth and sixtieth day after manufacture.

##### TESTS.

Five samples shall be required for each test, except for fire tests where twenty-three samples are necessary. All tests shall be made on full-sized samples where possible.

All samples shall be carefully examined and condition noted before subjected to any test.

##### PERMEABILITY AND ABSORPTION TESTS.

The five samples to be first thoroughly dried to constant weight in an atmosphere of about 250 degrees Fahr. and weight carefully recorded. Samples then to be placed on their faces in a pan or tray of water to a depth of one-eighth inch.

The samples shall again be carefully weighed at the following periods: One-fourth hour, one-half hour, three-quarters hour, one hour and each hour thereafter for a period of seven hours. The level of the water shall then be raised to a depth of two inches and samples again weighed at the following periods: Twelve hours, twenty-four hours and forty-eight hours respectively from the time of first immersion.

NOTE.—Superfluous moisture to be removed by carefully wiping with a damp cotton cloth before each weighing.

##### FREEZING AND THAWING TESTS.

Five samples to be immersed to a depth of two inches, as described in the absorption test, for forty-eight hours, and the weight carefully recorded; to be then placed in a refrigerator and subjected to a temperature of less than 15 degrees Fahr. for sixteen hours; to be then removed and placed in water where they shall remain for at least eight hours, temperature of the water being not less than 150

\*Read at the Columbus meeting of the National Association of Sand Lime Producers.

degrees Fahr. nor more than 200 degrees Fahr. during this period. This operation to be repeated ten times, after which the samples are again weighed while still wet from the thawing.

NOTE.—Immediately on completion of this test, samples are to be subjected to transverse or compression tests.

#### FIRE TESTS.

To be made on twenty-three samples as follows: Eighteen to be placed in a panel 4 inches thick by 18 inches high by 24 inches long. The samples to be laid on the 4-inch face in cement mortar with joints broken, having one header and five stretcher courses. The header course to be in the center. The panel to compose one side of a gas furnace suitably constructed to permit of the removal of the panel for water treatment at the end of the fire test. The sample panel to be subjected to fire on one side only for a period of one hour and thirty minutes. Temperature of furnace to be raised uniformly from that of the atmosphere to 1,700 degrees Fahr. in about thirty minutes and remain at about that temperature for the succeeding hour.

At the end of the fire test, panel is to be quickly removed from the furnace and a stream of water immediately applied for one minute through a one-half inch nozzle at a pressure of 75 pounds per square inch at the base of the nozzle. The distance of the nozzle from the sample to be twenty feet.

Five samples are to be placed within the gas furnace at the time of the test on the panel and receive the same fire treatment as the panel, except that they are to be heated on all sides. Two samples to be removed at the end of one and a half hours and plunged into cold water of about 50 to 60 degrees Fahr.; the other three to be removed and permitted to cool gradually in air.

After the above fire treatment the condition of each sample shall be carefully noted.

NOTE.—The fired samples which have been fired on all sides and as many as five samples selected from the fired panel, shall be tested for transverse and compression strength as prescribed, within twenty-four hours. The samples to be protected from the weather.

#### TRANSVERSE TESTS.

The samples to be placed flatwise on two rounded knife-edge bearings set parallel seven inches apart. The load is to be applied on the top, midway between the supports and transmitted through a similar rounded edge until the sample is ruptured.

The modulus of rupture shall be determined by multiplying the breaking load in pounds by twenty-one, three times the distance between the supports in inches, and dividing by twice the product of the width in inches by the square of the depth in inches.

Twenty-five samples which have been treated as follows shall be tested:

(a) Five samples which have been thoroughly dried to constant weight.

(b) Five samples which have been saturated as prescribed in the absorption test.

(c) Five samples which have been subjected to freezing and thawing treatment as prescribed in the freezing and thawing test.

(d) Five samples which have been fired on one side only. Samples to be selected from the fired test panel.

(e) Five samples which have been fired on all sides and were quenched and cooled in air.

NOTE.—This includes all of the samples subjected to fire on all sides.

#### COMPRESSION TESTS.

To be made on whole samples. The samples to be carefully measured and then bedded flatwise on blotting paper to secure a uniform bearing in testing machine and crushed. Total breaking load is then divided by the area under compression in square inches.

The following requirements shall be met to secure the approval and classification of the material represented by the samples submitted:

(a) Absorption (being the weight of water absorbed divided by the weight of the dry sample) shall not average higher than 15 per cent, and no sample shall exceed 20 per cent, and the absorption in six hours shall not exceed 75 per cent of the absorption in forty-eight hours.

(b) Freezing and thawing process shall not cause a loss in weight greater than 5 per cent.

(c) The fire and water treatment of the panel must not damage the brick to a greater average depth than three-eighth inch.

(4) Modulus of Rupture must be as follows:

For samples thoroughly dry, average shall not be less than.....	400
And no sample shall fall below.....	325
For samples thoroughly saturated average shall not be less than .....	300
And no sample shall fall below.....	245
For samples subjected to freezing and thawing process, average shall not be less than.....	265
And no sample shall fall below.....	210
For samples subjected to fire treatment on one side only, average shall not be less than.....	250
And no sample shall fall below.....	205
Samples subjected to fire on all sides and either quenched or cooled in air shall fill the above requirements for fired samples.	

(a) The ultimate compression strength must be as follows:

For samples thoroughly dry the average shall not be less than.....	2,500 lb per sq. in.
And no sample shall fall below.....	2,000 lb per sq. in.
For samples thoroughly saturated the average shall not be less than.....	2,000 lb per sq. in.
And no sample shall fall below.....	1,600 lb per sq. in.
For samples subject to freezing and thawing process, the average shall not be less than .....	1,675 lb per sq. in.
And no sample shall fall below.....	1,500 lb per sq. in.
For sample subjected to the treatment on one side only, the average shall not be less than.....	1,750 lb per sq. in.
And no sample shall fall below.....	1,600 lb per sq. in.

J. D. Jackson moved that the committee on specifications representing the sand-lime manufacturers should meet with a committee of clay-brick manufacturers, for the purpose of co-operating in establishing a standard set of specifications for these building materials. The motion was seconded and carried.

# MINERAL RESOURCES OF UNITED STATES

The twenty-third annual volume of the series, Mineral Resources of the United States, published by the United States Geological Survey, is now passing through the press. This volume contains a statement of the production of mineral substances in the United States during 1906.

Practically the same form of arrangement has been preserved in all of the twenty-two preceding volumes of the series, and it has become so familiar to the mining fraternity as to render any description unnecessary. But for those to whom this volume comes as a new book of reference it may be explained that the book is divided into chapters, each of which treats of a separate mining industry for the whole United States. The student who consults this report to find a combined statement of the mineral resources of a given State is referred to the tabular statement of output by States in the summary and to the index, in which, under each State, is a list of the minerals produced therein. The effort is also made to show the conditions of the domestic industry in relation to foreign conditions in the same mineral industry.

It is important, also, for the new reader to know that this volume is simply the consolidation of the separate chapters after they have been published in pamphlet form, frequently months in advance, and that these pamphlet reports, and not the final volume, mark the dates at which the reviews become available. Further, for greater statistical promptness, it is the custom of the Survey to give the principal figures to the public press in advance of the publication of the chapters in pamphlet form.

Several new names appear in this volume for 1906 as the responsible authorities in charge of individual chapters. This is in pursuance of the policy of the Geological Survey announced in the volume for 1905 of assigning all subjects to members of the Survey staff who, in this work and in allied problems, are employed solely in the Government service.

The report on iron ores for 1906 was prepared by Mr. Edwin C. Eckel, who, in past years, has made a special study of the iron ores of the South. The series of iron ore reports for the United States owes its statistical development entirely to Mr. John Birkinbine, of Philadelphia. Under his direction the statistics of iron ore production have been developed to an exceptionally high degree of accuracy. This has been due, fundamentally, to the great confidence given him by iron ore producers, among whom Mr. Birkinbine has developed a spirit of fraternity similar to that which Mr. James M. Swank, the General Manager of the American Iron and Steel Association, has evoked among the iron and steel manufacturers.

The reports on copper, lead, and zinc in preceding years have likewise been developed entirely by Mr. Charles Kirchhoff, of the Iron Age, New York. These reports have become classic for their statistical accuracy and for their keen and fair analysis of the trade situation. The report on copper for 1906 was made by Mr. L. C. Graton, and those on lead and zinc by Mr. J. M. Boutwell.

This volume also records the change of the administrative head of the Division of Mining and Mineral Resources from Dr. David T. Day to Mr. Edward W. Parker. Dr. Day devoting his time to the important work of preparing the reports on petroleum and natural gas.

The change of administration includes the placing of the statistics of metal production (except iron ores) under the supervision of Mr. Waldemar Lindgren, who has, as chief assistants, Mr. Charles G. Yale, of San Francisco, Mr. Victor C. Heikes, of Salt Lake City, Mr. Chester Naramore, of Denver, and Messrs. Boutwell, Graton, McCaskey, and Siebenthal, of Washington. This arrangement has materially strengthened the work of the division.

It is designed also to supplement the statistical data with the results of geological and chemical research in so far as they pertain to the economic development of our mineral resources. The Division of Mining and Mineral Resources has been for some time an integral part of the Geologic Branch of the Survey, this incorporation having been accomplished when the present plan of organization was adopted.

By way of brief review and summary of the series, it may be said that in the twenty-seven years covered by these twenty-three reports, the scope of the work has remained practically the same—an annual review of the mineral production of the United States and of the state of knowledge of the mineral deposits from which the products come. But the work involved has multiplied in two directions. In the beginning the statistical feature of the work was satisfied by an estimate as to the total output of each useful mineral. This estimate was based upon the best commercial estimates available, and the statistical correspondence was limited to a few hundred letters each year. When the control of the work passed into the hands of Dr. Day, he took it with the intention of developing each statistical inquiry from an estimate into an accurate annual census through confidential reports at first hand, as rapidly as facilities would permit. This result has now been achieved with every industry except petroleum, and to this particular and difficult task he will henceforth limit his work. The correspondence necessary for this annual census of the mines of the United States has grown from a few hundred letters to an average of three written or printed communications a year to every known mine operator of the United States, more than one hundred and fifty thousand in all. In order to make such correspondence successful, it has been necessary to send agents to the mines themselves, both for scrutiny of the statistical returns and in order to acquaint the operators with the nature of this inquiry and thus to secure the co-operation essential to success.

This growth of statistical work would have been necessary even if the mine development had remained stationary. Instead, the rate of increase has been far beyond all reasonable prophecy. In the twenty-seven years from 1880 to 1906, inclusive, the value of the mineral output of the United States has increased nearly five and one-fourth times. This marvelous growth is of additional interest in that it shows approximately by its fluctuations the financial ebb and flow of the whole country. From 364,928,208 in 1880, the value has risen gradually to the immense sum of \$1,992,517,555 in 1906. This is the value of the mineral products in their first marketable condition, as shown in the first large tabular statement of the summary, where all unnecessary duplication is excluded.

It is of interest to note in passing that Pennsylvania produced nearly \$600,000,000, or about 30 per cent of the total value of the output of 1906; Ohio about \$200,000,000, or 11 per cent; Illinois, \$117,000,000, or 6 per cent; New York and West Virginia, \$81,000,000, or 4 per cent each; Montana, Colorado, and Michigan, 3.5 per cent each; Arizona and Missouri, 3 per cent each; Alabama and California, 2.5 per cent each. The value of the mineral output of each of the twelve States named was in excess of \$50,000,000. If the combined value of output of eleven of these States (\$95,000,000) be deducted from the total (\$1,992,517,555) the value of output of the twelfth State, Pennsylvania (\$881,000,000), exceeds the combined value of output of all the remaining States of the United States by more than \$150,000,000. Keeping pace with this growth has been a strain, and it is gratifying that the system has so expanded that the statistics of this wonderful production continually increase in completeness and accuracy. This attainment is largely the result of the hearty co-operation of the producers, due to their faith in the Survey.

In carrying out the plan of co-operation with the other divisions of the Geologic Branch a twofold advantage is secured. It brings to the statistical work on the one hand a corps of trained men whose field observations have developed a keen appreciation of the geologic and economic importance of each mineral product. This has been particularly illustrated in the reports made by Mr. Lindgren and other mining geologists on gold and silver in the volume for 1905 and the reports on the same subjects and also on copper, lead, zinc, and quicksilver in the present volume. On the other hand, the mining geologists have obtained and will continue to derive from their statistical work an insight into the industrial and commercial conditions which so largely affect the demand for the different minerals and lead to the search for and the development of the mineral deposits with the geological relations of which their field work makes them acquainted.

The bringing together of these two classes of study of our mineral resources, that of their geology and manner of occurrence, and that of their statistics and economic conditions, is to be one of the special features of the future work of this division.

#### TO MAKE GLASS BRICK

The National Brick company, for the manufacture of building brick of glass, has been formed and a plant will be erected at Connellsville, Pa., at which the new building material will be made and shipped. The plant is to use a heavy, coarse "batch," which, it is claimed, will make brick with all the resistance to heat and weather conditions possessed by the ordinary clay brick. The company is composed of J. N. M. Shimer, of Dunbar, treasurer; Charles B. Lawton, secretary, and E. M. Hukill and E. F. Fulmer, of Pittsburg, directors of the company.

#### TO BURN ILLINOIS COAL WITHOUT SMOKE

Bulletin No. 15 of the engineering experiment station, "How to Burn Illinois Coal Without Smoke," by L. P. Breckenridge, director of the engineering experiment station, has just been issued.

A few pages are devoted to the principles of combustion and the losses due to smoking chimneys, but the larger part of the bulletin relates to the constructive features of those boiler settings and furnaces that have been found practically smokeless in operation at the power plant and in the experiment station at the University of Illinois.

The leading dimensions of the settings and furnaces are given and sectioned cuts show the general character of the settings. With each cut is given a statement as to the range of capacity of each setting for smokeless operation.

Special emphasis is given to the importance of knowing the rate at which the coal is to be burned on each square foot of grate surface, together with the per cent of volatile combustible which the coal contains, and for which a suitable combustion space or chamber must be provided. Some interesting cuts are produced showing clearly the significance of the numbers used in describing smoke densities, and also a chart devised for making graphic records of smoke observations. Five tables of tests are given showing the conditions of operation of a smokeless furnace under changes of boiler capacity varying from 50 to 150 per cent. There are no illustrations showing approved settings for the horizontal fire tube boiler, but suggestions are given as to methods of hand firing which will tend to reduce smoke production.

While this bulletin discusses the smokeless burning of Illinois coals, the principles and methods explained apply equally well to the burning of all kind of soft coal.

Copies of this bulletin may be obtained gratis upon application to the director, engineering experiment station, Urbana, Ill.

#### KAOLIN DEPOSITS IN LITIGATION

An important suit has been filed in the District Court of Edwards County, Texas at Rock Springs by Kate L. Gilbert against the United Kaolin Properties company, involving a section of land near Leakey, in Edwards County, this section being of great value by reason of the exceptionally fine kaolin minerals found upon the same, and it being the same section upon which the United Kaolin Properties company, and Eastern corporation, began operations of mining kaolin some years ago.

It appears that a number of years ago Dr. E. M. Tilman, a German professor of mineralogy, discovered large deposits of the highest quality of kaolin upon this land, and he sought to acquire this particular land. Subsequently, under a lease from Tilman, the United Kaolin Properties Company took possession of this land and began some operations of mining kaolin.

At that time, however, it seems there had been no accurate survey of the lands made in Edwards County, this and many other lands then having been located under what was known as the old "Reeves survey." It is claimed by the plaintiff in this suit, however, that this survey was not made upon the ground and was unreliable, and for this reason the State of Texas caused a new survey to be made by McCrickett & Hodges, and it developed that the rich kaolin deposits in fact had not been acquired by Tilman, but were located upon entirely different land than had been previously supposed, and that said land is in fact owned by Mrs. Kate L. Gilbert, a wealthy woman of New York, owning large land interests in Edwards and other West Texas counties.

A new corporation of \$350,000 capital, organized by Chicago capitalists, which recently obtained its permit to do business in Texas, known as the Texas Kaolin Company, has obtained a lease for the kaolin rights from Mrs. Kate L. Gilbert, and Mrs. Kate L. Gilbert has now filed this suit in the District Court of Edwards County.

It is said to be a fact that many errors in location and taking possession of lands and making improvements thereon have been caused in Edwards County and in that section of the State by reason of the old Reeves survey, and this was the cause of the former corporation, known as the United Kaolin Properties company and many others locating upon wrong land.

It is claimed that in recent years the courts have recognized the McCrickett & Hodges resurvey as a correct survey, requiring many people to adjust themselves to new lines established by the later survey, and as a result of this the lands which Dr. Tilman acquired as kaolin lands were in fact not the lands which he sought to acquire, and hence the United Kaolin Properties Company the defendant in this suit, had begun its operations on the wrong land.

The suit by Kate L. Gilbert will no doubt result in an accurate determination of the various titles in that county in case of conflict of surveys.

The new corporation known as the Texas Kaolin company has recently qualified in Texas and not only obtained leases from Mrs. Kate L. Gilbert on the land from which she caused the defendant to be dispossessed in this suit, but also on other large tracts of valuable mineral lands in Edwards, Bandera and Uvalde Counties, and this new company is now preparing to begin extensive operations for the purpose of placing upon the market and utilizing these valuable kaolin and mineral deposits.

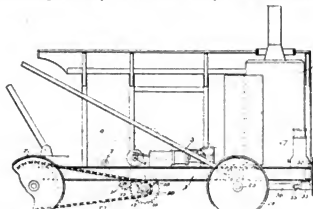
Mr. W. W. Plifer of Charlotte, North Carolina, has placed contracts with the Henry Martin Brick Machine Manufacturing company of Lancaster, Pa., for the "Martin" Patented Rack Pipe Steam Brick Dryer System of 20,000 daily capacity.

# NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

873,756. Steam-Shovel. George W. King, Harry J. Barnhart and Charles B. King, Marion, Ohio, assignors to The Marion Steam Shovel Company, Marion, Ohio, a Corporation of Ohio. Filed Sept. 8, 1904. Serial No. 223,096.

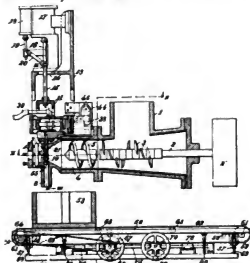
In a steam shovel or the like, the combination, with a car body, and propelling mechanism mounted thereon, means for mounting said body on the usual railway trucks, and means



for connecting said propelling mechanism therewith, of axles interchangeable with said trucks and provided with ground wheels, one of said axles having driving wheels operatively connected with the propelling mechanism, the other axle being provided with steering wheels, and steering mechanism controlling said steering wheels, substantially as described.

874,482. Brickmaking Machine. Joseph E. Bond, Maywood, Ill. Filed July 27, 1906. Serial No. 328,123. Renewed May 16, 1907. Serial No. 373,975.

In a brick molding machine, a clay reservoir provided with a discharge spout or barrel; means for detaching a slug of clay from the mass within the reservoir, and means for discharging the slug from the spout by fluid pressure in said spout, substantially as described.

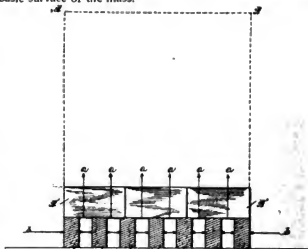


In a brick molding machine, a clay reservoir provided with a plunger space and a discharge spout, a hollow plunger working in said spout, means for momentarily admitting a

fluid under pressure into the spout at each stroke of said plunger, whereby a slug of clay will be suddenly and forcibly discharged through said spout, and means for feeding the clay into the plunger space, substantially as described.

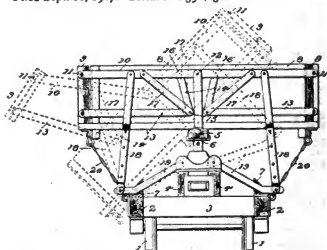
874,582. Method of Transporting Brick, Etc. William H. Francis, Cherryvale, Kan., assignor of one-half to Charles Francis, Independence, Kan. Filed June 17, 1907. Serial No. 379,367.

The method of transporting masses of material in bulk, which consists in applying the lifting strain at a point below the center of gravity of the bulk, but above the basic layer of the material and at the same time lifting the basic layer by a pinching strain applied below the plane of application of the lifting strain and at right angles to the same, but above the basic surface of the mass.



The method of transporting separate blocks of material in stacked-up bulk, which consists in spacing apart the basic layer of such blocks, applying the lifting strain below the center of gravity of the mass above the basic layer and between the units of the basic layer and at the same time pinching and lifting the basic layer by a horizontal strain at right angles to the lifting strain and moving the entire pile intact.

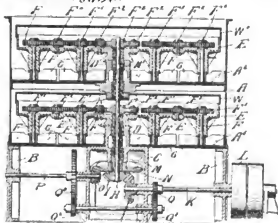
874,519. Dump-Car. Edward S. Maclin, Knoxville, Tenn. Filed Sept. 10, 1907. Serial No. 392,238.



In a dump-car or similar structure, the combination of a car-body having a displaceable wall, a toggle connecting said wall and a relatively fixed part of the body, and a link connecting to said toggle to forcibly spread the same upon dumping of the car.

In a dump-car or similar structure, the combination of a car-body having a displaceable wall, a toggle connecting said wall and a relatively fixed part of the body, and a link connected to the toggle and adapted to forcibly spread the same upon dumping of the car and to lock said toggle when the car-body is righted.

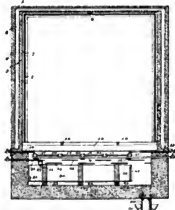
875,234. Mixing Machine. Mois H. Avram, New York, N. Y., assignor to Avram-Leet Engineering Company, New York, N. Y., a Corporation of New York. Filed Dec. 15, 1906. Serial No. 347,946.



In a mixer, the combination of a pan, a revoluble sleeve concentric therewith a frame carried thereby, paddles carried by said frame and revoluble relatively thereto, a shaft within said sleeve geared to said paddles said sleeve being revoluble relatively to said shaft, and means for causing said sleeve to revolve about its own axis.

In a mixer, the combination of a pan having a central boss arising from its bottom to a considerable distance, a frame resting thereon and having a depending sleeve extending through said boss, paddles rotatably mounted in said frame, a shaft passing through said sleeve, said shaft having a bearing supported on top of said frame and geared to said paddles, and means for revolving said shaft and said frame respectively relatively to one another and to the pan.

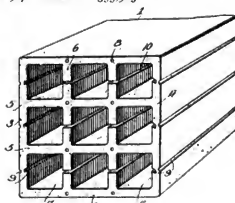
875,368. Drying Apparatus. George W. McMullen, Picton, Ontario, Canada. Filed May 26, 1905. Serial No. 262,381.



In a drying apparatus, the combination of a substantially closed drying chamber having insulating side and top walls, a series of liquid troughs constituting condensers arranged in the lowermost part of said chamber, a series of baffles arranged in horizontally distributed order above said con-

densers, a radiator coil disposed in horizontally extended position above said baffles, one or more open water receptacles arranged in juxtaposition to said radiator coil, and means for supporting commodities in the drying chamber above said radiator and water receptacle.

875,489. Conduit Tile. John Balch, Newark, N. J. Filed Feb. 5, 1907. Serial No. 355,915.



A conduit having grooved opposing outer walls and slotted interior division walls.

A conduit provided with rows of transverse compartments formed by division walls, the vertical division walls being provided with longitudinal transverse slots, the outer side walls of the conduit being formed with weakening grooves in alignment with the slots of the division walls of the different compartments.

875,662. Composition for Brick, Etc., and Process of Making Same. Luke Houze, Monterey, Cal., assignor of fourteen-sixtieths to R. H. Willey, fourteen-sixtieths to Arthur Branquart, and fourteen-sixtieths to Charles F. Niklaus, Monterey, Cal. Filed Nov. 6, 1906. Serial No. 342,298.

A composition for brick, etc., consisting of divided rock of substantially the composition above stated and having a specific gravity of about 1.85 with a binder of fire-clay.

A composition of brick, etc., consisting of rock of substantially the composition stated, and having a specific gravity of about 1.85 in a divided condition, and a binder of fire-clay in the proportion of 75 to 80 per cent of rock and 25 to 20 per cent of the fire-clay.

The process of forming a composition brick which consists in pulverizing and calcining rock of substantially the composition stated, and having a specific gravity of about 1.85 mixing the same with fire-clay in the proportion of substantially 75 to 80 per cent of the rock and 25 to 20 per cent of the clay, molding and burning.

#### ANOTHER KAOLIN COMPANY IN TEXAS

The Melcher Coal & Clay Co., of O'Quinn, Tex., is preparing to ship their fine kaolin and china clays from the pits on the S. A. & A. P. R. R., to the north and eastern states. The pits have 10 to 18 inches of striping, then 5 to 24 feet of kaolin and china clay, then 25 feet of yellow and blue clay and natural drainage; besides this, there are several million tons of fine brick and tile clays, fullers earth and white pumic dust. The finest lignites in the country underlay these clays in unusual thick beds. It is claimed that these clays are still finer than the Edwards county clays, and the deposits worth ten times as much on account of their nearness to the markets and the railroad running through it, and the greater variety of clays and coal.



## CLAY RECORD.

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GEORGE H. HARTWELL, EDITOR

## SUBSCRIPTIONS

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Vol. XXXII.

MARCH 16, 1908.

No. 5

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

The smile of the hypocrite is a misfit.

One way to avoid the fire is to keep out of the frying pan.

Give the average man the chance to talk about himself and he will deliver the goods.

Its well enough to ask advice, but occasionally a man makes a mistake in following it.

Better stick to the straight and narrow path even if the scenery is less attractive than that along the other route.

Did you ever buy anything that proved to be better than the person who sold it to you said it was. Try it on the CLAY RECORD.

The trade paper is the cement that holds the business structure together, and every business man should be a "booster" for the trade papers in his line. A salesman cannot go into any up-to-date place of business without finding the trade paper. The trade paper of today is the greatest force in the entire commercial world. If you are not a reader of the CLAY RECORD and are interested in this field it is high time you are sending in your subscription.

Did you forget to subscribe for the CLAY RECORD last month. If so, take out your check book and write a check at once for one dollar, or better still, send a one dollar bill, or if that is not handy, send stamps.

Read the leading article in the CLAY RECORD—"Clay Products vs. Cement Fireproofing," by F. W. Fitzpatrick of Washington, D. C. He is the greatest authority in America on this subject. If this one article alone is not worth to any clay manufacturer many times the yearly cost of the subscription all we can say is that it is a hopeless case, and you can have a return of your money if you wish. Next month we will have another article of the same character. Do you wish to read it? If so, send in your subscription now.

## BUILDING OPERATIONS FOR FEBRUARY

While the building depression incident to the recent currency stringency, which shortened the supply of money for building operations and also developed a waiting policy, still continues there is an improvement in some quarters, which contains much of encouragement. Official reports received and tabulated, show a total falling off of 33 per cent, or practically one-third, as compared with the operations of February, 1907. The loss, amounting to about fourteen million dollars, is nearly accounted for in the decrease in New York and San Francisco, amounting to more than twelve million dollars. Last month our reports showed a gain in 9 cities, and those below indicate a gain in 16 cities. This is an encouraging indication, the gains being widely distributed. Chicago holds up remarkably, showing a gain of 9 per cent, while the total value of permits issued is but little more than a million dollars less than those issued in Greater New York.

Among the other cities showing gains, are the following: Bridgeport, 39; Cincinnati, 29; Denver, 18; Milwaukee, 87; Minneapolis, 33; Omaha, 6; Philadelphia, 27; Paterson, 61; St. Louis, 9; Spokane, 149; Syracuse, 140; Salt Lake City, 63. The following figures show the percentage of loss in leading cities: Baltimore, 26; Buffalo, 20; Columbus, 53; Davenport, 61; Dallas, 42; Detroit, 61; Duluth, 26; Grand Rapids, 53; Hartford, 63; Indianapolis, 41; Kansas City, 11; Louisville, 9; Los Angeles, 46; Memphis, 44; Mobile, 42; New York, 50; Pittsburg, 25; Rochester, 55; St. Paul, 52; San Francisco, 66; Seattle, 50; Toledo, 30; Washington, 11; Worcester, 87.

## BRICK THREE THOUSAND YEARS OLD

The museum of the Dutch Reformed Theological Seminary, New Brunswick, N. J., has just received a baked brick about 11 inches square which was excavated in Nippur by the Babylonian expedition of the University of Pennsylvania. It was presented to Dr. Thomas of the Arabian Mission of the Reformed Church by Dr. H. V. Hilprecht, and its age is estimated at 3,000 years.

## OBITUARY

James Monroe, 90 years old, a former pottery manufacturer at Mogadore, Ohio, died at his home in Akron, Ohio on his birthday. Several weeks ago he expressed a wish he could live until he was 90 years old.

William G. Beyerley, formerly the manager of the Jenkins & Reynolds Co., of Chicago, and well known to clay manufacturers in the Portsmouth, Ohio, district, died at Cripple Creek, Colo., where he was manager of the Cynide mill.

Charles H. L. Smith, president of the Union Porcelain works, Greenpoint, L. I., N. Y. died of a complication of diseases in a New York hospital. He was 60 years of age and leaves a widow and two children at 34 Gramercy Park.

Charles T. Burnham, one of the pioneer brick manufacturers of Milwaukee, Wis., president of the Standard Brick Co., and connected with the Milwaukee Building Supply Co., died at his home 264 Prospect avenue. He was 60 years of age and born in Milwaukee, and was a brother of John Q. Burnham. For several years he had suffered from heart trouble.

## FIRE! FIRE! FIRE!

The plant of the Canada Brick Co., at Medicine Hat, Alberta, Canada, was totally destroyed by fire causing a \$10,000 loss. Insurance only \$3,000.

The large plant of the Coffeyville (Kans.) Vitrified Brick & Tile Co., was damaged by fire to the extent of \$20,000. Insurance only \$5,000. Cause of fire unknown. The building will be rebuilt as soon as possible.

## YAKIMA VALLEY BUILDS ITSELF SHORT OF BRICK

Just what the thriving towns of the Yakima valley will do for fireproof building material for the next four or five months, is a question asked by many contractors and others contemplating business building. The unusual demand this winter has completely emptied the brick kiln at Granger, Wash., and the concrete block plant at Toppenish until no material is to be had short of shipping in from a prohibitive distance.

It will require at least four to five months for the new brick plant at Toppenish or the Granger plant to turn out brick. The concrete block works at Toppenish has resumed operations, but owing to the frosty weather still prevailing its output will be limited to six or eight hours' work per day.

If weather conditions permit the large block plant will be able to supply the most urgent part of the demand.

Fully fifty houses, including brick and concrete-block business and dwelling houses, have been commenced and finished in Toppenish during the present winter.

## RAILROAD TIES MADE FROM SHALE BY WEIR BRICK PLANT

The Weir City, Kansas, brick plant has entered into an experiment and manufactured 10,000 railroad ties from shale, the same material that brick is made from. These ties are used extensively in the east and are becoming a substitute for wooden ties, owing to the fact that a great deal of the tie wood has been used. Between each of the shale ties, when they are used, is placed a cement block and in this way the track is made much more solid than it is with wooden ties.

## ACCIDENTS, DAMAGES AND LOSSES

John Der was so injured by the machinery of the C. P. Meyer Brick works at Bridgeville, Pa., that he died within a few hours.

Involuntary proceedings in bankruptcy were instituted in the United States court against the Red Brick Company of Durham, N. C.

G. Valdez, an employe of the Sunset Brick & Tile Co., Gonzales, Texas, had his fingers cut off by a piece of timber which he was handling.

Mrs. Anderson, employed in the Sebring, Ohio, pottery, was scalped when her hair caught in a revolving overhead shaft. She is fatally injured.

Hans Johnson had his fingers crushed between two cars at the plant of the Atlantic Terra Cotta works at Perth Amboy, N. J., so that they had to be amputated.

Default judgment in the sum of \$1,003.03, has been entered in favor of the Citizens' National Bank of Sugar City, Col., against the Hewitt Brick & Tile Co.

The Merchants' and Planters' National Bank has begun suit for \$3,300 against the Sherman (Tex.) & Denison Pressed Brick Co., in the 15th district court.

The Baltimore (Md.) Vitrified Clay Co., was adjudicated bankrupt with its consent in the U. S. District court, and John W. Hall and Wm. H. Perkins appointed receivers.

Application for a receiver for the Austin Pressed Brick Co., Western avenue near Hopple street, Cincinnati, Ohio, has been made. The assets are \$55,000 and liabilities \$23,000.

Henry Carlier, 20-year-old son of W. I. Carlier, superintendent of the Enterprise Brick & Stone Co.'s plant at Pittsburg, Pa., while acting as watchman at the works was shot by a robber who was after the brasses on the machinery.

The Manitowoc (Wis.) Clay Products Co., has won a verdict against the C. & N. W. Ry., which was carried to the upper court by the latter company, giving to the clay company \$13,000 as damages, and a subway under the tracks.

Some person or persons during the night cut a four foot ditch across the highway so as to let the water from Tracey lake into the clay hole of the Bibb Brick Co., at Macon, Ga., causing the plant to close down and a loss of thousands of dollars.

## NO COMPROMISE ON BRICK

No compromise has been effected between the fire brick and paving brick interests. From indications there will be a merry row for some time over the ruling of the Interstate Commerce Commission that a "brick is a brick." The paving brick interests will soon have a chance to have their complaint heard. They will endeavor to show the commission that it erred in its finding that there should be no difference in brick rates.

As a result of the ruling of the commission, paving brick is being hauled at 2½ cents per 100 higher, eastbound from Cleveland, Ohio railroads having reduced fire brick from 25 cents to 22½ cents and raised paving brick up from 20 cents per 100. Westbound brick rates, as announced recently, are not to be disturbed. A meeting of fire brick men to have been held here last week, so far as can be learned, did not materialize.

### UPPER COURT SUSTAINS LOWER COURT

Affirming the decision of Judge Kirwan in circuit court at Manitowoc, Wis., the supreme court in a decision just handed down, gives the Manitowoc Clay Product Co. a judgment against the Chicago & North Western Ry. Co., for damages alleged to have been done the clay company business by construction of tracks of the North Western for its cut-off line for the Green Bay extension two years ago. Under the decision the Chicago & North Western must pay the clay company the \$13,000 damages and provide a subway for the company to reach its clay pits and in event of failure to construct the subway within a given time, must pay the clay company damages to amount of \$66,900.

In the action the clay company claimed that the construction of the Chicago & North Western tracks had practically destroyed the business of the company by cutting off access to its clay pits. The clay company leased lands, used as a yard from the Wisconsin Central and when the Chicago & North Western planned the Green Bay extension and cut-off the Central gave permission to cross these lands, without consulting the clay company. When objection was raised by the local company the Chicago & North Western offered \$500 in full settlement but the clay company demanded a subway under the tracks to reach its clay pit. This the company refused. In court it was shown by the clay company that this clay pit was the principal asset of the company's business and that to destroy it, would mean that the company must abandon its yards, valued at more than \$100,000. The clay company won in the local court and the supreme court upholds the decision.

### MACHINERY BEING SHIPPED FOR NEW BRICK PLANT FOR BRITISH COLUMBIA

Five earloads of brick-making machinery has been loaded onto scows at the Royal City Mills wharf at Vancouver, B. C., for shipment to Storm Bay, Sechart Peninsula, about 42 miles from Vancouver, where an industry is being established by the Sechart Brick & Tile Company, Ltd. This machinery is the first consignment and when the plant is in place it will be the finest north of San Francisco.

This company is composed of shareholders living in Vancouver. New Westminster, Nanaimo and Victoria, and it shows what faith British Columbians have in the resources of their own Province, since they are all local men, and that half of the \$150,000 capital has already been subscribed. Officers of the company are: Ald. Walter Hepburn, vice president; J. I. Disette, secretary-treasurer; J. H. Maunder, who is vice president of the Canadian Financiers; other directors, J. D. Tait, James Main, James G. Mutch, and G. Donnelly, president of the Vancouver-Prince Rupert Meat company.

One hundred and thirty-one acres of clay, unsurpassed in quality, is owned on the tidewater at Storm Bay. This deposit will be developed with a plant which will produce 60,000 brick per day, and which it is expected will start manufacturing in May. Common bricks will be turned out at first, though the better grades and also terra cotta may be made, so excellent is the clay. Owing to the mild climate of the coast, manufacturing will go ahead all the year round, and as building is going rapidly ahead in all coast cities, the operations of the company should meet with success.

### HOOSIER CLAY MACHINERY

Madden & Company of Rushville, Ind., have just issued their 1908 catalogue, which is the largest and most complete one that the company has ever had published.

The beginning of Madden & Company dates way back to 1878 and they have continued in business ever since, enlarging each year in the number of machines they turn out and enlarging in their factory equipment. They now have a complete up-to-date plant.

Their special auger machine is their newest model. The design is especially good. It shows great strength and simplicity. It has extra pugging and feeding attachment the use of which is practically lamination.

If you are interested in brick or tile machinery you should have this catalogue to make your collection complete.

### LIFE CRUSHED OUT BY FALLING BRICK

In the collapse of the arches in the brick kiln of the Blackwell Brick and Tile company's plant at Blackwell, Okla., six men were buried beneath tons of brick. Five were fatally injured and one seriously. Harry Fohs has died and three are hanging between life and death with almost no hope of recovery. The workmen were removing the braces from between the arches and the earth under the heavy pillars of brick, softened with recent rains crumpled away, causing the terrible accident.

Over 30,000 brick were in the kiln and fell upon the six unfortunate men, entirely covering them. Fellow laborers came quickly to the rescue, but before they could remove the tons of weight, five men were injured.

The kiln operated by the company is one of the largest in the state. At the time of the accident, it was entirely empty and workmen were preparing it for filling.

The great arch roof, built of no less than 30,000 brick, representing an enormous weight, rested on brick pillars braced on the inside with slanting timbers. Heavy rains had softened the earth surrounding the pillars and as the last brace was taken away, without a moment's warning, the entire mass fell inward burying the six workmen. Those who were injured are Harvey Shouse, Dave Schultz, Wm. Wolf and Herman Kibber, all of whom are fatally injured, and Henry Schayer, who is seriously hurt, but may recover.

Other workmen rushed to the kiln as the massive walls collapsed and it was but a few minutes before the injured men were removed from the pile of brick and laid tenderly on couches in the company's office building.

Temporary attention was given all and they were removed to their homes. Harry Fohs died from his injuries within three hours after the disaster and the four most dangerously hurt are not expected to live.

### THE BUNGALOW BOOK

The above is the name of a book that has just been published by Henry L. Wilson, an architect of prominence in Los Angeles, Cal. Copies of this book are sold at one dollar, or plans of any of the bungalows are furnished with all working drawings for ten dollars. To any one interested in the building of a bungalow or summer home this California idea will enlighten you. The designs are all very attractive. The estimates of costs are reasonable and altogether the book seems to fill a long felt want.

## THE SWIFT SYSTEM

Pamphlet No. 3 has just been issued by Edward A. Swift, Ottawa, Ill., on the Swift System of Trucking, Drying and Burning of all Kinds of Clay Goods.

The Swift truck is built along the same lines as a common barrow having hooks so constructed that it can pick up a hack of brick without levers or trips, and setting down the load in the shed in the opposite manner. Much is gained by the use of this truck.

The hot floor dryer is constructed of cement and tile and uses the exhaust steam from the engine. When once hot it takes 72 hours to cool off.

The Swift kilns are slack coal burning kilns, burning all kinds of clay ware with the cheapest kind of slack coal. The construction is very simple, they are inexpensive to build and they are great labor savers. Write to Mr. Swift at Ottawa, Ill., and get full particulars.

## BALTIMORE VITRIFIED CLAY CO. FAILS

John W. Hull and William H. Perkins were appointed by United States Judge Morris receivers for the Baltimore (Md.), Vitrified Clay company pending the selection of a trustee in bankruptcy. The receivers bonded for \$10,000.

The company was adjudicated a bankrupt with its consent. Its assets consist of 102 acres of land lying partly in the city and partly in Baltimore county, with a plant for manufacturing brick, paving blocks and other clay products. A fire last December damaged the plant, and an insurance thereon of between \$19,000 and \$21,000 is being paid to the Mercantile Trust and Deposit company, trustee under a mortgage deed of trust of the company. This mortgage was executed March 1, 1905, and bonds of the par value of \$46,000 of an authorized issue of \$60,000 are outstanding under it. There are also outstanding \$60,000 of second mortgage bonds under a mortgage executed by the company on June 15, 1907. In addition to the real estate and the portion of the plant not destroyed by fire the company has assets of about \$7,000 not covered by the mortgages.

## CAMPBELL TAKES D. K. BAYNE'S PLACE

D. K. Bayne has severed his connection with the Trenton (N. J.) Potteries company as its president. He is succeeded in the presidency by John A. Campbell, who will continue to fill the place of general manager, which he has held for several years.

The retirement of Mr. Bayne is that he may relieve himself of as much of his active business management as possible. Under his administration every department of the company increased. He leaves the business splendidly organized.

Mr. Bayne contemplated resigning from the office of president for a number of years, but until this time he could not find a way to drop the business, which has made himself and his company famed the world over.

The retiring president will in the future make his home in New York, where he has extensive business connections. He expects from time to time, to withdraw from his active offices so he may enjoy the mental and physical peace which he has so well earned. He has given up his suite of rooms in the Trenton house, where he has made his home when in Trenton in the past.

## MEERSCHAUM IN NEW MEXICO

For more than a century meerschaum has been extensively used in the manufacture of pipes and cigar holders, the principal source of supply for the material being deposits in the plains of Asia Minor about 120 miles southeast of Constantinople. These deposits are said to have been worked for other uses for more than a thousand years.

The German name meerschaum ("sea foam") is paralleled in French "écume de mer," which may be less beautifully translated "scum of the sea." The mineralogist will tell you it is sepiolite, a hydrous silicate of magnesia, but this designation will not diminish the smoker's enjoyment of his meerschaum pipe.

The ease with which meerschaum can be carved, its whiteness and the fine polish it takes with wax render it especially suitable for elaborate carving and artistic treatment in the manufacture of pipes. These pipes are prized for the rich cream-brown or brown color that the bowls assume after being smoked awhile. This color is caused by the permeation through the meerschaum of the mixture of the nicotine from the tobacco with the wax used in polishing the pipe. As long as there is absorbed wax in the meerschaum the color of the pipe will grow darker and with continued smoking will become nearly black. It is therefore necessary to "fix" the color of the pipe when the proper shade is reached. The method employed to accomplish this is in part a trade secret.

The manufacture of meerschaum into pipes is a thriving industry in parts of Germany and Russia, employing more than 3,000 workmen. It is said that the supply of meerschaum for this industry is becoming low, and the discovery of deposits of the mineral in New Mexico is therefore interesting.

Two deposits of meerschaum have been located in the upper Gila river valley, one about 23 miles east of north of Silver City, the other at a mine about 12 miles northwest of Silver City.

Mr. Douglas B. Sterrett, of the United States Geological Survey, visited the mine in October, 1907, and has prepared a report on the deposit there which has just been published by the Survey as a part of an advance chapter of Bulletin No. 340, "Contributions to Economic Geology, 1907." The deposit lies in the bottom and walls of the canyon of Bear Creek, occurring in veins, lenses, seams, and balls in limestone in both nodular and massive form. The nodular meerschaum thus far tested contains iron stains and particles of grit and is inferior to the meerschaum of Asia Minor. The more compact, massive material may perhaps be found free from stains and of better quality.

Mr. Starrett's report sketches briefly the geological relations of the deposits, describes the mode of occurrence of the meerschaum, and presents the results of chemical and physical tests and analyses of the mineral.

## MONTEZUMA PLANT GETS ORDER FOR MORE THAN A MILLION FURNACE BRICK

The Burns & Hancock Fire Clay Co., at West Montezuma, Ind., have received a contract from the Illinois Steel company at Gary, Ind., for 1,750,000 brick to be used for furnaces. The plant is running night and day, and expect to ship 20,000 brick a day beginning this month.

### CONDITIONS FOR TRADE IN HOCKING VALLEY BRIGHT

Officers of the brick and terra cotta companies operating in the Hocking valley in Ohio, report much improvement in their business. For a time orders were very scarce and the companies piled up many bricks in their yards. Within the last two weeks orders have picked up greatly, and one of the large companies said that more orders had been booked to date than were taken up to June 1 last year.

Another company reports a good demand from the Northeast and has taken some large orders from Milwaukee, Chicago and St. Paul. Inquiries from architects and contractors are good and the brick men are anticipating a good year.

### OHIO FACE BRICK MEN ORGANIZE

Representatives of about twenty face brick manufacturers of the state of Ohio, met at the Chittenden hotel in Columbus, and formed the Ohio Face Brick Manufacturers' association, the main object of which is to oppose what the brickmen consider as arbitrary and unwarranted manipulation of freight rates by the railroads.

Ohio is among the foremost of the brick producing states, and there are at least 35 of the larger plants, practically all of which, it is believed, will join with the new organization.

The following officers were elected: William H. Hunt, Cleveland, president; J. M. Adams of the Iron-Clay Brick Co., Columbus, vice president; L. G. Kilbourne, of the Columbus Brick and Terra Cotta Co., Columbus, treasurer, and H. S. Charles, Cleveland, secretary. The executive committee is composed of William H. Hunt, J. M. Adams and L. G. Kilbourne.

### DRAIN TILE WANTED IN TEXAS

The state of Texas passed drainage laws in March, 1907. Now drainage districts are being formed. The largest one seems to be the Gulf Coast Drainage association, whose head officers are as follows: J. B. Peck, Port Arthur, Tex.; R. H. Bushway, at Alcoa, Tex.; P. P. Austin at Victoria, Tex.; O. G. Willacy at Corpus Christi, Tex.; L. A. Smart at Brownsville, Tex.; Geo. W. Griggs at Houston, Tex.; T. W. Maxey at Houston, Tex. There is only one tile factory and it is at San Antonio, where fuel is very high. There are millions of tons of the finest pipe clay near by, and at near the great Kaolin deposits on the S. A. & A. P. R. R., near Muldoon, with an abundance of the finest lignites and wood on the same ground and same spur, and the tile makers are invited to examine the propositions. J. C. MELCHER, O'Quinn, Texas.

### WORKMEN AT SHAWNEE ACCEPT REDUCTION AND STRIKE ENDS

The Shawnee, Ohio, local union of the International Brick, Tile and Terra Cotta Workers' Alliance, has signed a scale submitted by the Iron Clay Brick company which changes nearly all labor to piece work and clay miners will take a reduction of 5c per ton. The new contract is not operative until January 1, 1909.

All brick plants in this vicinity have been shut down for more than three months. The Iron Clay plant will resume operations at once, and take back all its old employees. This action establishes a precedent for several other plants in this section, that have been having labor troubles for the past three months.

### MEXICAN POTTERY

Consul-General A. M. Gottschalk, of Mexico City, reporting on Mexican pottery, says:

Almost every one of the tourists who visit Mexico during the winter season carries away some specimen of modern Mexican pottery, be it the gray, blue, and red Guadalajara, the green-glaze of Oaxaca, the terra-cotta inlaid with chips of broken chinaware from Cuernavaca, or the blue and white pottery of Puebla, often called for purposes of sale "Talavera."

This particular pottery is in itself very attractive, the characteristic type being that of a grayish-white ground partially covered with a pattern usually of deep delft blue, with which browns and yellows are sometimes sparingly used in combination. The patterns are generally heraldic and almost invariably crude and mediaeval in design.

The history of the Puebla "Talavera" ware appears to be as follows: In the early days of Puebla's history the Dominican friars, struck by the aptitude of their Aztec parishioners at making crude native pottery, and desirous also of obtaining tiles for the monastery and church which they were building, sent word to the Dominican establishment at Talavera de la Reina, in the province of Toledo, Spain, that they could make good use of five or six of the brotherhood who were acquainted with the Spanish processes of pottery making, if such could be sent out to them. Accordingly a number of Dominican friars, familiar with the clay-working processes in use at Talavera, were assigned to the Puebla house of their order, and under them were trained a generation of workmen, who for the first few succeeding years produced some excellent pieces. In course of time the industry was gradually discontinued, and with the confiscation of church property and the withdrawal of the religious orders from Mexico little more than the tradition remained.

There are in Puebla a number of potters who are making characteristic blue and white pottery interesting in itself, but in most cases it has sadly degenerated from the fine old models.

### MASONRY CONSTRUCTION

A Guide to Approved American Practice in the Selection of Building Stone, Brick, Cement and other Masonry Materials. By Alfred E. Phillips, C. E., Ph. D., and Austin T. Byrne, C. E. Illustrated. Pages, 117. Price \$1.00. American School of Correspondence, Chicago, Ill.

Another one in the series of books published by the American School of Correspondence. It aims to treat the subject practically with which it deals, and contains some valuable hints and directions on the selection of materials for masonry, their treatment and methods of construction. The text is written in the popular scientific style, free from formulae that call for a knowledge of the higher mathematics, but provided with tabulation of means for determining the information necessary for safe and successful building. Portland cement and concrete are given a fair share of the text and the concrete contractor will find the book a valuable addition to his library. A great deal of ground is covered in a comparatively small space and everything but the essentials is excluded. It is well worth the price at which it is sold.

## POTTERY NEWS ITEMS

The Ford China Pottery at Ford City, Pa., which employs several hundred persons will resume operations at once.

The Roodhouse (Ill.) Pottery Co., will increase the capital stock of their company as agreed at the last meeting of the stockholders.

All the stoneware potteries in the Crooksville, Ohio district have resumed operations and are giving employment to over 500 men and women.

The two Macomb, Ill., potteries of the Western Stoneware Co. have reopened. New kilns have been added to the west plant increasing its capacity 50 per cent.

Cochran, Drugan & Co., incorporates with \$75,000 capital stock and are operating the Brian Pottery, Trenton, N. J. The pottery is a sanitary ware plant and employs 150 hands.

The Bell Pottery Co.'s property at Columbus and Findlay, Ohio, were offered for sale by the receivers without any bidders. The value of the different properties is about \$225,000.

The D. L. Melick Pottery Co., Zanesville, Ohio, has been incorporated with \$10,000 capital stock by David L. Melick, George W. Owens, Frank Carey, John W. Kropp and John J. Le Roy.

Bert Williams of Monmouth, Ill., has succeeded Geo. M. Thompson as superintendent of No. 5 pottery at White Hall, and Mr. Thompson will take charge of a large sewer pipe works at Ft. Dodge, Ia.

James E. Norris has sold his interest in the Anchor Pottery Co., Trenton, N. J., to Jones Brothers, who were interested in the pottery with him. Jones Brothers use nearly all the pottery manufactured as premiums in their tea company.

The Hamilton Pottery Co., Trenton, N. J., has been incorporated with \$30,000 capital stock. The incorporators are N. W. Bock, Joseph C. Sharkey, and Frank W. Allaire. The office is at Artisan and Murray streets. They will start up in the plant formerly used by the American Porcelain Works.

## PROFESSOR SHEDD OF PULLMAN TO PUBLISH EXHAUSTIVE WORK ON CLAYS

Professor S. Shedd, of the department of geology, has practically completed an exhaustive work on the clays of Washington which work will be published in book form by the Washington State College at Pullman, about the end of the present college year. The work represents the labor of four years, the last of which was passed at Stanford where the author completed his laboratory tests. The chemical analysis was done by Professor Bloor at the state college. The book will consist of 300 pages and will have the title, "Clays and Clay Industries of Washington." It will be divided into three parts, the first being a general discussion of clays and their properties; the second dealing with the method of working clays in the state of Washington; while the third will be a discussion of the clays in the state, and will include all analysis, chemical and physical, made upon them.

Mr. C. E. Close of Matawan, New Jersey, has just installed a complete outfit of "Martin" machinery in his plant, and which was furnished by the Henry Martin Brick Machine Manufacturing company of Lancaster, Pa.

## SAND OR LIME BRICK OR BLOCK NEWS

Work has begun on the Monterey (Cal.) Sand Lime Brick Works located at Seaside.

D. R. Ingram is forming a company to manufacture brick from the Kaw river sand near Turner, Kansas.

W. F. Muecke, Macon, Ga., contemplates establishing a plant to manufacture hollow cement bricks and blocks.

The Silicate Brick works on Parthenais street, Montreal, Quebec, is to be sold by H. J. Ross, 180 St. James street. It is a running concern.

The Kansas City (Mo.) Gray Brick Co., is now erecting at its works at Banner Springs, a mill for grinding sand, so as to make a finer grade of face brick.

The Composite Brick Co., of Rochester, N. Y., are rebuilding their plant at Brighton, which was recently destroyed by fire. Charles Lange is superintending same.

Courtney B. Whitson has been appointed receiver for the Composite Brick Co., Indianapolis, Ind., on a petition filed by James H. Mills. The liabilities are given at \$5,000.

Elmore, Minn., is to have a cement tile works. The capital stock is \$10,000. B. J. Maland is president and S. H. Taylor, secretary. The plant will be started in the spring.

The Sandstone Brick and Lime Co., Seattle, Wash., has filed suit against M. F. Shaw, a heavy stockholder of the concern to secure an assessment of \$12,000 for stock sold to him alleged not to be paid for.

The plant of the Ft. Wayne (Ind.) Pressed Brick Co., valued at \$20,000, was completely destroyed by fire. This is the second time the plant has burned. Dan Beers is receiver for the bondholders of the company.

The Connecticut Brick Co., Hartford, Conn., has been incorporated with \$60,000 capital stock. The company will manufacture sand lime brick and the incorporators are Edward R. Orcutt, William E. Johnson and Sidney E. Clarke.

The Hummelstown (Pa.) Brownstone Co.'s brick works which make sand lime brick was again visited by a fire. This time the company were more fortunate and succeeded in extinguishing the flames before much damage was sustained.

The Wilkesbarre (Pa.) Cement Brick Co., is now making brick out of sand and cement at their Jackson street plant. Ultimately they expect to make 50,000 brick daily. The president of the company is R. A. Reed, J. E. McKeon is vice president, George Russell secretary and Lewis Becker, treasurer.

The New Home Cement Brick Co., of Preble, Maine, which is a suburb of Portland, only seven miles out, sent a representative to Perth Amboy, N. J., for laborers to work in the factory. The agent wished to enroll 150 for jobs and was only able to induce one-third of that number to leave for the steady positions, they being averse to leaving Perth Amboy.

## QUITE A DIFFERENCE IN COST OF REPAIRS

According to the report of the Omaha, Neb., city engineer, \$13,000 was expended in repairing forty-five miles of asphalt paving in 1907, while but \$3,000 was spent in repairing the fifty miles of brick and stone paving and the miles and miles of cement walks.

## MISCELLANEOUS ITEMS

A. B. Baldrige of Mt. Auburn, Ill., has moved to Illiopolis, where he will operate the Illiopolis Tile works.

Theo. Fuselier and Theo. Savoy will establish a dry press brick plant with 20,000 brick daily capacity at Eunice, La.

Robert N. Weber of Mount Vernon, Ill., is considering the establishing of a dry pressed brick plant at Victoria, Texas.

W. W. Phifer & Bro. of Charlotte, N. C., are making improvements and installing a dryer to the plant at Stout, N. C.

The Greater Leavenworth (Kansas) Club are looking for someone to make paving brick in that city and will give the required information to anyone.

At Omaha, Neb., on Hamilton street, owners of property to the number of sixty-seven as against fourteen, were in favor of brick over asphalt pavements.

The American Sewer Pipe Co., is dismantling the sewer pipe works at Sharon, Pa., and shipping the machinery to one of their Ohio plants. The plant has been closed for a number of years.

The Central Shale Brick Co., recently incorporated with \$60,000 capital stock, have offices in the Benoit building, St. Louis, Mo. They will establish a plant to make 40,000 shale brick daily.

The Owensboro (Ky.), Brick & Sewer Pipe Co., have increased its capital stock from \$75,000 to \$125,000 and changed its name to the Owensboro Sewer Pipe Co. A large addition has just been completed to the plant.

The United States Encaustic Tile works, Indianapolis, Ind., recently elected the following officers: Charles M. Cooper, president; W. M. Picken, vice president; Earl M. Ogle, secretary, and William F. Landers, treasurer.

The Jefferson Brick Co., Birmingham, Ala., has been incorporated with \$25,000 capital stock. The officers are Edward Hiller, president and treasurer; B. A. Ingles, vice president, and T. H. Sims, secretary and general manager.

The Union Brick Co., Jacksonville, Fla., are producing 60,000 brick per day at their works on Black Creek, near Middleburg. They own their own boats and lighters. C. C. Howard is president and Frank T. Nooney is secretary and treasurer.

The Speeceville Brick Manufacturing company, Speeceville, Pa., are installing an equipment of "Martin" machinery, together with the "Martin" Patented Rack Pipe Steam Brick Dryer System of over 33,000 daily capacity, installed by the Henry Martin Brick Machine Manufacturing company of Lancaster, Pa.

George H. Emery, who for eight years has been manager of the Omaha (Neb.) Hydraulic Press Brick Co., has resigned and is now the vice president and manager of the Lehigh (Iowa) Clay Manufacturing Co., with office at Fort Dodge. The company has bought the Corey and the Lehigh Clay works and will remodel and enlarge both of them.

The William Grace company of Chicago, Ill., have placed with the Henry Martin Brick Machine Manufacturing company of Lancaster, Pa., contracts covering the "Martin" modern outfit of Soft Mud Brick Machinery and "Martin" System of Rack Pipe Steam Brick Dryers to be installed at their Montreal plant, this equipment to turn out 50,000 brick daily.

Tom Dewing will manufacture brick at Rushville, Neb. this year, starting with a 400,000 kiln.

A company is being formed to build a brick and tile works at Girard, Kansas, to make 75,000 brick daily.

The Newburn (N. C.) Brick Co., has been organized with \$5,000 capital stock by W. E. Moore, W. B. Blades and J. V. Blades.

The Crush (Texas) Brick & Tile Co., filed an amendment to its charter increasing its capital stock from \$15,000 to \$25,000.

New machinery is being installed in the Gadsden (Ala.) Brick Co. works, a portion of which was destroyed some months ago.

The El Reno (Okla.) Brick Co., decided at its last meeting to double the capacity of its plant and put in a waste heat drying system.

L. C. Grant of the Milam County Lignite Co., Milano, Tex., wants to correspond with manufacturers of dry press brick machinery.

Supt. John Hatch of the Manteno (Ill.) Brick Co., will start the works soon as the weather will permit. Many orders have been received for future delivery.

A movement is on foot by N. H. Strickland, cashier of the Bank of Beebe, Ark., to organize a stock company to purchase the Beam & Tidwell brick plant south of town.

Dr. O. G. Pearson has bought the Blumburg Brick works at Seguin, Texas, and a new company will be organized called the Lone Star Brick & Manufacturing Co.

The Ft. Pierre (S. Dak.) Brick Co., had to abandon the idea of making stiff mud brick out of the gumbo and machinery is now being placed to manufacture pressed brick.

The Bemenderfer Brick Co., Goshen, Ind., has been organized by A. R. Bemenderfer and G. W. Bemenderfer and the company will operate the old works. New machinery is being added.

The Walton Brick Co., Aulander, N. C., has been incorporated with \$20,000 capital stock by J. A. Dunning, P. B. Walton and H. W. Webb. They have taken over the old works of J. A. Dunning.

Getchell Bros. of Bangor, Maine, are making extensive improvements to their works at Brewer. New machinery and electrical power will increase the capacity of the plant four times and make it possible to make fancy face brick.

The Burlington (Ia.) Brick Co. has been organized with \$25,000 capital stock. Officers are W. W. Parsons, president and general manager, and Paul Phillips, secretary. The plant is on Sunnyside avenue and has been operated by W. H. Parsons and others for several years.

The Dakota Portland Cement Co., will build a 2,000 barrel Portland cement plant at Chamberlain, S. Dak. D. B. Zimmer and associates are the interested parties. B. B. Lathbury of Philadelphia is the consulting and constructing engineer. The power plant will be about 2,000 horsepower.

The Rogers-Hesseltine Co., of Seattle, Wash., has opened an office in the Peyton building, Spokane, Wash., and will promote buildings and other enterprises. The Spokane Plaster & Brick Co., capitalized at \$100,000 at Second Ave. and Perry St. is being taken over by them. H. A. Bronson is manager of the Spokane office.

The Louisville (O.) Brick & Tile Co., will reconstruct their plant which burned last month soon as the help can be secured.

The Washington Brick & Lime Co., Spokane, Wash., is putting in an additional boiler of 80 H. P., and making other improvements to their plant at Freeman.

The Hamburg (Pa.) Vitrified Brick Co., under the management of Frank Adkinson, is pushing repairs at the plant so as to resume operations soon as possible.

The Holton (Mich.) Brick Co., has been reorganized and J. W. Hubbel is now a copartner with P. J. Connell. They will operate the plant soon as possible.

Capt. J. W. Mintich of Wrightsville, Pa., has resigned as manager of the Mountville (Pa.) Brick Co., and he has been succeeded by W. W. Weirs of May's Landing, N. J.

The American Refractories Co., Joliet, Ill., has been so crowded with orders that they are obliged to double the capacity of their plant. They are now working 350 men.

The plant of the Bloomington (Ill.) Pressed Brick Co., which has been closed down for several months was opened up the first of the month and nearly 50 men put to work.

The American Web Tile Sewer Co., Syracuse, N. Y., has been incorporated with \$100,000 capital stock. Incorporators are William Cahill, Walter Welch and Edward P. Cahill.

The Connecticut Brick Co., Hartford, Ct., has been incorporated with \$50,000 capital stock. The incorporators are Edward R. Orcutt, Wm. E. Johnson and Sidney E. Clark.

The Cronly (N. C.) Brick Co., has been incorporated with \$25,000 capital stock by G. T. Wilder, J. W. Flynn, J. S. Hooper, J. W. Freeman, H. F. Wilder, L. V. Grady and O. P. Johnson.

The St. George Brick Co., Thomaston, Maine, will operate their plant this spring. Samuel K. Hamilton and others have taken hold of the plant and after extensive repairs are made will put it into operation.

The Nelraska City (Neb.) Brick Co., has declared a 5 per cent dividend and elected the following officers: J. M. Huberle, president; J. W. Butt, vice president; F. J. Homeyer, secretary and treasurer.

Mr. W. F. Hardin of Goldendale, Washington, is installing a "Henry Martin" Horse Power Brick Machinery equipment on his plant, furnished by the Henry Martin Brick Machine Manufacturing company of Lancaster, Pa.

Mr. A. A. Gery, Reading, Pa., will retire from the hardware business as he has purchased a controlling interest in the Kaaterskill Brick Co., which is capitalized at \$1,000,000 and located on the Hudson river, in New York. He will manage the plant.

The Sechelt Brick & Tile Co. Ltd., Vancouver, B. C., has shipped the first five carloads of brick machinery to their plant which is to be built at Storm Bay on Sechelt Peninsula. The officers are Akl. Walter Heyburn, president and J. J. Dissette secretary and treasurer.

Mr. Wm. F. Stimmiel of Kutztown, Pa., who recently installed the "Martin" Patented Rack Pipe Steam Brick Dryer System on his plant of 18,000 daily capacity has now placed his order with the Henry Martin Brick Machine Manufacturing company of Lancaster, Pa., for the materials to increase the daily capacity to 33,000 brick, the work of installation having already been started.

Jesse B. Hart has closed a deal for the purchase of the Peerless Brick Co. at Macon, Ga.

The Standard Brick & Stone Co., Bellaire, Ohio, has resumed work at the McClainville plant.

The St. Maries (Idaho) Brick Co., has been organized and will incorporate to make both common and pressed brick.

The Duplin Mfg. Co., Kenansville, N. C., has been incorporated by H. F. Pierce and others to manufacture brick.

The Burlington (Ia.) Brick Co., will build a plant on the W. H. Riddell farm two miles northwest of Gilchrist, Mercer county, Ill. Arthur Gillett will be manager.

The Ottumwa (Ia.) Brick & Construction Co., reopened their plant last week after a two months' shut-down on account of switching rates charged by the railroad.

The North Iowa Brick & Tile Co. at Mason City, Ia., received orders for seventeen carloads of tile in one day last week. Orders from all parts of the country are coming in.

J. P. Herrick, who was the manager of the Millsdale Brick Co. plant near Joliet, Ill., has secured a position with the Utica (Ill.) Brick Co. Mr. Hylebom will succeed him at Millsdale.

The Columbia River Clay Co., Kennewick, Wash., has been incorporated with \$50,000 capital stock. The plant is already built and at the present time they are building a continuous railway kiln.

The Bradley Brick & Tile Co. Ltd., has been organized with \$40,000 capital stock at Lake Charles, Ia. The officers are S. T. H. Bradley, president and general manager; H. H. Hanagriff, vice president; I. C. Carter, secretary; W. M. Hanagriff, treasurer.

## DIRECT HEAT

# DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**

62-64 William St.

NEW YORK CITY



## CLAY RECORD.

## WANTED

Superintendent brick manufacturing plant; estimator fire-proofing; salesman; brick and sewer pipe; insulating, terra cotta, bookkeeper, manager; fire pipe and sewer pipe to manager; salaries, \$1,500 to \$1,800. Other positions in our office open. Write for particulars.

HARTFORD, Conn.  
305 Broadway, New York, or  
1010 Hartford Bldg. Chicago.

## FOR SALE

One power Press in number one condition, used only a short time, capacity 100 per day. Ask for full particulars.  
American Enameled Brick & Tile Co.  
1 Madison Ave. New York

## FOR SALE CHEAP

Two American Clay Machinery Company No. 24 combined brick machines with repair parts sufficient to make machine first-class. Capacity 750 to 1000 per hour. Greatest bargain. Write for particulars.  
GREAT EASTERN CLAY CO.  
28 Cortland St., New York

## FOR SALE

Three two-press Whitteker pressed machines. Each machine is complete with counter shaft and ready to run. Condition good.  
One single press Whitteker machine, all complete and ready to run. These machines are for making pressed brick. Condition good. Special price.  
6,500 soft pine pallets, each 30 inches long, 9 inches wide. Local stock. Write for prices for these pallets for six cents apiece F. O. B. cars.  
We also have several engines and boilers, heaters, pumps and connections.  
THE COLUMBIAN CEMENT CO.  
304-306 BURNAP Bldg., Columbus, Ohio.

FOR SALE. CRISP—New and re-laying rails, 12 lb. 16, 20 and 30 pound. For prices, address:  
ATLAS CAR & WFG CO.,  
Cleveland, Ohio.

## WANTED

We want to buy a stone or a better building of some kind which we can utilize for drying sheds for drain tile. Give us full description of building. We have been used for and best cash price as well as location is first letter. We must business and want definite replies.  
The Consolidated Tile and Brick Mfg. Co.  
Knox, Ohio.

## BRICK PLANT FOR SALE

Containing about 40 acres of best clay without top soil, perfect drainage, situated midway between Baltimore & Washington with necessary railroad facilities. Plant was partly destroyed by fire. Two still mud machines engine new steam plant, 16 ton boiler and air dryer with 200 steel gas (wacker) and kilns remain intact. Large house containing a room for superintendent. Purchaser could make this a modern fully equipped two machine plant for a little money.  
Address G. A. B.  
Clay Record, 307 Dearborn St.  
Chicago, Illinois

## WANTED

A practical Brick Burner, Must wages, experience to the  
Knox Brick Co., Ltd.  
Vermilion, Alta., Can.

## WANTED

Position as Superintendent or foreman of soft or stiff mud plant. Must be a worker and be willing to live up or down dirty kilns, also the handling of mud and all classes of machinery. Test references.  
Address, O. M., care Clay Record.  
Chicago, Ill.

## FOR SALE

One Two Model steam Press Brick Machine  
One K. Iron Frame Dry Pan  
One No. 6 Brewer Combination Brick & Tile Machine with all necessary dies and cutters.  
One Clay Disintegrator.  
One Clay Elevator.  
One Tile Elevator.  
O. W. DUNLAP  
Bloomington, Ill.

## POSITION WANTED

I have had twenty-two years' experience in fire clays, brick, hollow brick, building the gas retorts and settings. Understand making magnesite and silica brick; want position as superintendent.  
W. T. J., care Clay Record,  
Chicago, Ill.

## POSITION WANTED

Young man desires a position as Superintendent or sales manager, understanding stiff mud or dry press process. Has traveled extensively.  
TRAVELER, care Clay Record,  
Chicago, Ill.

## WANTED

To buy or lease brick plant. One making mortared or gray face brick, or fire brick preferred. The world has interest in and will management of company.  
C. A. M., care Clay Record,  
Chicago, Ill.

## FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.  
THE ATLAS CAR & WFG CO.,  
Cleveland, Ohio.

## FOR SALE

Drain Tile and Brick Plant, including sheds and Kilns and 55 acres of land underlain by limestone. Or will sell machinery consisting of one 40 horse power Boiler, one 30 horse power Engine, one 10 Fat Machine with dies to 12 inch one Raymond Disintegrator one Paving Automatic Tile Table, one Silect Brick Table and dry one elevator. Cars, Trucks, Wheelbarrows, etc. Address:  
Mellon & Long.  
Nemah, Ohio

## PARTNER WANTED

A good reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick.  
DENNIS, care Clay Record,  
Chicago, Ill.

## BRICK AND TILE PLANT

## FOR SALE

At Carthage, Ill., a modern soft mud brick machine, 5 H. Madden & Co. machine for making tile and stiff mud brick, machinery, sheds and kilns in good repair. 35 H.P. engine and 50-H.P. boiler, new. Address:  
W. E. LYON & Co.,  
Carthage, Ill.

## POSITION WANTED

Position by experienced and practical brickmaker as superintendent of a stiff mud or dry press brick plant. Experience in burning brick and care of kilns and machinery. Address:  
W. S., care of Clay Record,  
Chicago, Illinois

## FOR SALE

One Kells Brick Machine, One No. 3 Disintegrator, Hovion Co. make. One semi-automatic Side cut cutting table, Wallace Co. make. One 40 horse power Gasoline Engine, Seventy five Bricks Model. All in good condition. Address:  
W. H. Vander Hayden  
Ionia, Mich.

## WANTED

A pug or tempering mill of medium capacity, in good condition. Give full description and lowest cash price in first letter.  
R. C. PORTER  
Lewistown, Ill.

## FOR SALE

One Hercules brick machine, Horton Mfg. Co. make, capacity 4000 per day. This machine made for same; 50 good models, mud has only made 2 million brick. Brick sheds, racks and pans to hold 100,000 brick, 5 good brick trucks, good reason for selling.  
L. H., care Clay Record,  
Chicago, Ill.

## WANTED

We want to find a market for a large deposit of kaolin. We have other valuable clay for speckware, pottery, terra cotta and high class brick.  
Address, Chamber of Commerce,  
Room 11117 Astoria, Oregon.

## WANTED

A position as a brick burner in a Dry Press or Paving brick yard. Have had much experience and can show good references.  
Address, A. E., 302 1/2 3rd street,  
Hicksville, Ill.



## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT.  
Care Clay Record, Chicago, Ill.

## FOR SALE

One-half the stock of a successful incorporated dry-pressed red brick company, carrying with it position of a very experienced treasurer of the company. Situated in Illinois city of 60,000, is fully equipped, now running, prosperous and has established and growing trade in adjacent territory as well as in Chicago. Present holder is in poor health and has other business, \$7,500.00 will buy half the stock, cash or negotiable paper. Excellent chance for good man. Holder of other half of the stock is one of the best-known brick makers in Illinois. Address, U. S., care Clay Record,  
Chicago, Ill.

## FOR SALE

Boiler 60 tubes, 3 inches, 15 feet long by 66 inches horizontal.  
2 Steam Gear Tempering Wheels, complete.  
1 Potts Disintegrator, 3 inch rolls.  
1 American Clay Manufacturing Co. Brick Slide Cylinders.  
1 Cornell Single Die Steam Press, 15 M. daily.  
1 6 die & 8 inch Brick Machine, Automatic slide 10 M.  
1 American Clay Mfg. Co. No. 10 Brick Machine, Automatic slide 10 M. Side Cut or End Cut 10 brick, capacity 100 M. brick per day.  
1 Chandler Automatic End Cutting Machine, 30 M.  
1 Chandler Automatic End Cutting Machine, 30 M.  
1 Chandler Double Die Press, made by Ohio Ceramic Co.  
1 Martin Drag Belt Conveyor, 35 feet long, 30 inch belt.  
6 Clay Brick Carts.  
12 sets Casts Harrows.  
12 Trucks.  
1 No. 40 horse power Side Valve Engine.  
1 Motor Brickton Hot Air Pump.  
1 Yard Roll.  
1 Davidson Pump 2 inch discharge.  
Address, NEW JERSEY  
CAKE OF CLAY RECORD  
Chicago, Illinois

## WANTED

A traveling representative to sell Fire and Face brick. Address:  
Face Brick care Clay Record  
Chicago, Ill.

## FOR SALE

Have 50 acres of fine clay land. Railroad running through it. Adjacent city limits. No brick works within 100 miles. Brick receipts at \$15.00 thousand. Would like to sell the whole interest. Address in first letter a brick plant who is looking for a location.  
Address:  
T. C. Chamberlain, R. Dsk.

## SUPERINTENDENT WANTED

For fire brick plant. State qualifications, wages wanted and references. Address:  
M. A., care Clay Record,  
Chicago, Ill.

## FOR SALE

One No. 2 Potts & Co. Clay Disintegrator. Used only six months. Address:  
C. S. BOLFSBURG SONS  
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## REPORT OF THE TWENTY-SEVENTH ANNUAL MEETING OF THE IOWA BRICK AND TILE ASSOCIATION

### FIRST SESSION

The convention was called to order by President W. H. Brecht at 2:30 p. m. in the banquet hall at the Savery House, Des Moines, Iowa, January 22d.

President Brecht: We have with us a gentleman who has once before appeared before this Association, he again desires to extend to you a welcome to this city. I have the pleasure of introducing Hon. G. W. Mattern, Mayor of Des Moines.

### MAYOR'S ADDRESS OF WELCOME

Mr. President and Members of the Iowa Brick and Tile Association, it is a pleasure to me to assure the members of this Association that you are welcome to our city. We are glad to have you hold your twenty-seventh annual meeting in Des Moines. You represent one of the greatest if not the greatest industry of our country. The clay industry of this city of Des Moines is our principal industry; hence it is very fitting and proper that you should hold your annual meeting in the Capital City this year.

I congratulate you, gentlemen, on the number present. It proves to me that you are here for business; therefore Mr. President, I will only detain you one moment. We hope that your deliberations will be profitable and productive of much good, both to yourselves individually and to your Association, and incidentally to your customers.

Again, gentlemen, on behalf of the citizens of Des Moines, I welcome you to the very best that we have, and hope that your sojourn in the city will be so pleasant that you will return.

President Brecht: To respond to these good wishes and this cordial welcome I have the pleasure of presenting a gentleman who needs no introduction to this Association—our esteemed friend, Judge J. L. Stevens, of Boone.

### RESPONSE TO ADDRESS OF WELCOME

Mr. President, Members of the Association, and Mr. Mayor: I am sure that all our Association join with me in thanking the Mayor for his cordial welcome to this city. I congratulate the Association on the fact that we can meet again in our Capital City. Each time we return here we feel more at home. Each time we return here we realize that the craft in this area is a mighty cordial, good lot of fellows, and that they are building up an industry here of which

the whole State may be proud. We are glad to see Des Moines' progress, Mr. Mayor and Mr. President, so that it has become the commercial center of this State; and we never come here but what we find something new and valuable. I congratulate Des Moines on the fact that notwithstanding every member from Des Moines that was at the first meeting of this organization twenty-seven years ago has either passed away across the river or retired from business, they have been succeeded by their sons and others who have extended, broadened and improved the industry of which they laid the foundations. The elder Rawson, the Elder Brecht, Robertson and others, the founders of the industry, have passed away or gone out of the business; but their business continues and extends, and in that we see only what we may expect all over this State in the other cities. The industry which we represent is the oldest perhaps in the civilized world, and it will continue to grow and extend, and we may congratulate ourselves that in building up industries of this kind we are building something for our children in the future.

Gentlemen, I recognize that we are here for a good time as well as to improve ourselves, and when we come to Des Moines we expect to be royally entertained, because they always do it. Look out for surprises. I don't see Mr. Gatch nor Mr. Hackenschmidt here this time, but I look for something else. I would not be surprised if we were thrown onto one of those ball-bearing conveyors and shot through the hot tunnels over here on the river, or something of that kind, but at any rate we look for a good time.

I thank you, Mr. Mayor, for your cordial welcome. President Brecht: Before taking up the next item on the program—the President's annual address—I wish to announce the appointment of the following committees:

Nominations: F. A. Stephenson, Mason City; B. M. Huntley, Boone; D. F. Morey, Ottumwa.

Resolutions: J. B. McHose, Boone; R. G. Coutts, Grinnell; F. W. Stewart, Des Moines.

Legislative: Paul Beer, Des Moines; O. T. Dennison, Mason City; Chas. A. Rawson, Des Moines; W. P. Hawkins, Oskaloosa.

Railroads: C. J. Holman, Sargent Bluff; J. W. Shackelford, Des Moines; W. W. Lewis, Williamsburg.

### PRESIDENT'S ANNUAL ADDRESS

It gives me much pleasure to welcome you to this, the Twenty-seventh Annual Convention of the Iowa Brick and Tile Association. As President and a resident of Des Moines, it is indeed gratifying to me that so many have responded

to the invitation to meet in this city and I am sure that it is equally gratifying to the other members of the Executive Committee as well as to all of the Des Moines Manufacturers, who have co-operated with us in our efforts to make this the most successful Convention in the history of the Association.

Twenty-seven years ago when our Association was founded I was not giving much thought to the manufacture of Brick and Tile and a number of Conventions have since been held in this city, some of which I know nothing, but what adds to my pleasure at this time is that we are fortunate in that some of the founders have been spared and that this meeting is graced with their presence. We honor and respect these members who so faithfully devoted their time and contributed cash when needed to form this organization and their memory will always be cherished by those who became members later on and others who are yet to become members. I cannot pass without making mention of the fact that to me a History of the Association would be most interesting. Such a History could not now be compiled since complete reports of the Conventions have never been kept. I believe that this should be done hereafter, and recommend to this Convention the passing of a resolution providing that an official report of the proceedings of future meetings be made and distributed among the membership.

At our last Convention held in Sioux City, we were all congratulating ourselves on just having closed one, if not the most prosperous and successful year's business in our history. There had been a market for all that could be produced, labor troubles were few and collections had been good. We were also congratulating ourselves on the prospects for the year just entered upon, 1907. Prosperity was abroad not only in this state but generally throughout the United States. As far as I can learn, few complaints, if any, came from the Brick and Tile Manufacturers for several months, when a scarcity of labor was noticed. Building operations were heavy, railroad companies were making extensive improvements and extensions. Men were in demand at factories of every description. With some it was impossible to secure sufficient help to operate their plants to capacity. In some instances factories lost money because of their inability to fill orders and contracts on time. Through it all many idle men could be found, men whose families were in need, but they were looking for soft snaps at a high wage. The situation as it was reminds me of a gentleman who employed a great number of hands in the west part of England, and in order to encourage his work people in a due attendance at church on a fast day, told them that if they went to church they would receive their wages for that day in the same manner as if they had been at work. Upon which, a deputation was appointed to acquaint their employer that if he would pay them for over hours, they would attend likewise at the Methodist Chapel in the evening.

Do not understand me as being inflexibly toward labor. The majority of the American laboring men of today are products of our public schools, and they are becoming a power equally as great as Capital. Harming the agitators, the dictators and the walking delegates, men who think and believe that the world owes them a living, I see no reason why these two great powers, Capital and intelligent American Labor, should not establish the most friendly relations. We are not only interested that friendly relations be established between ourselves and labor, but between other crafts and labor and especially between the mine operator and the miner. The joint meeting of the Iowa Coal Operators' Association and the United Mine Workers of America of this district will be held during the month of March to effect a wage scale for the two years commencing April 1st. Should these two bodies fail to reach an agreement, operations at the mines would be suspended. This is a contest in which

the members of this Association, large users of coal, are vitally interested. We are confronted with the great problem of how and when a more harmonious and business-like arrangement can be established between these two powers.

Another question of no lesser importance and one which has caused the closing down of factories, suspension of Building operations and the suspension of extensive improvements and extensions by Railroad Companies along with the cancellation of large orders for equipment, is the financial flurry or panic which overtook this country about three months ago. The tide of prosperity which this country had been enjoying for the past number of years had taken a turn. Banks found it necessary to reserve their cash and pay out only limited amounts. Few loans were made and borrowers were called upon to meet their obligations when due. The Brick and Tile Manufacturers had been enjoying a very prosperous year. The demand exceeded the capacity of the plants to supply and many were planning to increase their output. The wise brick and tile maker, however, does not rush blindly on, but carefully studies the situation and first takes his surplus earnings to pay off his debts, if he has any. I have learned that some of you were and are still carrying various contractors for large amounts. I know from experience that many were unable to settle when due because of their inability to negotiate paper which had been given them for their pay.

This situation reminds me of a story, as the situation concerning the labor problem. A Missonri farmer owed a neighbor named Bill Johnson twenty-five dollars and had owed the amount for years. One day he met Bill and said: "Don't be uneasy, Bill, I have the thing all fixed up by which I can pay you." Bill asked him how he had got it fixed and the farmer said: "Well, Bill, if nothing happens, next year I hope to raise a good crop of corn, and I intend to trade some of the corn for a yoke of oxen, and I know an old man in the next county that owns an old mare, and he wants to trade her for a yoke of oxen. Now, Bill, when I raise the corn and get the oxen I will make the trade for the old mare, and then I will bring her home and raise mule colts. And, Bill, the very first mule colt I sell, you shall have the money."

Now, gentlemen, I believe that many of us appreciate Bill Johnson's position.

In New York the flurry developed into a genuine panic; values in stocks in some instances falling fully fifty per cent. Interest rates rose to as high as one hundred per cent and many of our wealthiest men were unable to borrow even at that high rate. In Iowa and the West in general the situation was not quite so serious and we may congratulate ourselves and our people. Their conservatism stands out in bold contrast with the reckless speculation on Wall Street. That the present outlook is brighter than for some time, there is no doubt. Money is easier. The reserve deficit of the banks is a thing of the past and in its place is a surplus. Several bankers have said to me in the past few days that it was only a question of a very short time until these manufacturers and contractors who have been so eager to sell their paper would find a market at a good figure. It seems to me that the great trust and confidence which we have placed in each other has had everything to do with bringing about this change and preventing a repetition of former panics, and that the whole situation as it was and now stands and promises to be goes to show the ability of the American business man when brought face to face with a crisis. The emergency has been met without question and we should congratulate ourselves and each other.

It was my desire before retiring from the Presidency of this Association to visit the plants and factories over the state and become better acquainted with the craft, but found it impossible to do so. I understand, however, even though the last two months of the year were not so bright, that the

year as a whole was a very prosperous one. The demand was equally as large as the preceding year and prices equally as high or higher. Profits must therefore compare favorably. A decrease in building operations may be expected for this year but I do not believe with serious results to the manufacturers of brick. We see a very noticeable increase from year to year in the use of brick on account of the advancing prices of lumber. The forests are annually being denuded by the saw and the axe of the lumberman to an extent which cannot be met by the annual growth and we may reasonably expect that this increase in the use of clay products will be greater each year. This may appear to some as being somewhat overdrawn but a comparison of prevailing prices of lumber with those of several years ago will tend to corroborate my statement. As to vitrified brick for paving purposes the output has been materially increased. The high standard required by the manufacturer and the increased agitation for good roads has brought good results.

I have heard it said that a reduction in the output of clay products might be anticipated on account of the introduction of cement concrete construction. Now, no man is a firmer believer in concrete—in its proper place—than I. There are many ways in which it can be used successfully. It is admirable for railroad work, bridges, and where used in masses and is not exposed to intense heat. It seems to me that the over ambitious cement producer who is clamoring for a new market and cares not how the cement is used, providing he makes a sale, has brought about this competition and there should be no alarm among our craft because there are no prospects of it ever supplanting the product of the clay worker. Experts tell us that the fire-resisting qualities of Portland cement is between 600 and 700 degrees. Now what is 700 degrees for a fire? What was it that stood the test of the Baltimore and San Francisco fires? It was not cement, stone, granite, or any other material but the brick and tile fireproof structures. Cost of construction is the only serious matter with which we have to contend and this is one of the criticisms advanced by our cement concrete friends. One way to make concrete cheaper than brick construction is to use, as most of them do, unskilled labor. This menace might lead to the substituting of concrete work for brick work but no great extent unless we experience a scarcity of bricklayers or an unreasonable exaction of the trades union restricting the number of apprentices. This practice of the trades union is causing a diminution in the number of skilled workmen and is depriving the young men of today of the privilege of acquiring a trade. If this privilege is denied the young men of our country, what to do with the rising generation will become a serious problem. This matter demands our attention and it is our duty to encourage the establishment and continuance of trade schools. If we will do this no shortage of skilled workmen will be experienced and the substitution of concrete for brick will be reduced to the minimum.

At Ames, Iowa, is located the Iowa State College of Agriculture and Mechanic Arts, a splendid educational institution. Many of our young men are taking advantage of the opportunities offered there and are preparing themselves for the activities of business life, and to do something toward the advancement and progress of the country. Iowa ranks well to the top of the list in the production of clay products and there should be established and maintained at the Iowa State College a department of Ceramics. It will not take much money to equip and maintain such a department and this organization should again recommend to the Legislature a liberal appropriation for this purpose and each member should give the matter his individual support. To this end we have been working for some time, but I do not believe

with the right sort of enthusiasm. During the last session of the Legislature some of our members appeared before the Appropriations Committee and were received very cordially. They explained the need of such a department and went away feeling that possibly the bill providing for an appropriation, which was to be introduced, would be acted upon favorably. At adjournment, however, it was found that the whole matter had been overlooked. Let us not feel discouraged but try again.

The program which outlines the work of this Convention gives evidence of great care taken by our Secretary in its preparation. It is varied and interesting and I hope that the papers and discussions may result in benefit to everyone present. Our time is somewhat limited and it is therefore important that we should all make it a point to be here at the appointed time.

My term of office will soon expire and in conclusion let me say that my relations with the Executive Committee and Officers have been extremely pleasant. I heartily thank them and all the members of the Association for the courteous treatment I have received and hope for my successor the same full measure of co-operation. I hope that when you return to your homes you can say that you have had a royal good time, and wish for all a successful and prosperous year.

Secretary Platt: The next number on our program is one that bears directly on part of our President's address, in regard to the Ceramic School at Ames, and it is to be hoped that every one present will consider all the points brought out in this paper and join in the discussion. We would like to have all these subjects thoroughly discussed. We will now listen to a paper on "The Ceramic School, its Value to the State and the Clayworking Trade," by Mr. H. R. Straight, of Adel, who is a graduate of the Mechanical Engineering Department of the State University of Illinois and also of the Illinois Ceramic School.

#### THE CERAMIC SCHOOL, ITS VALUE TO THE STATE AND THE CLAYWORKING TRADE

The function of a State institution is primarily the higher education of those living within its borders who may seek to specialize. The reason for specialization being the development of a greater usefulness to the State's industries and their uplifting and to personal income.

The students of the school of Ceramics must be able to logically attack and dissolve difficult problems along their special lines in order that they may become of greater usefulness to the State. They must be able to carry out weighty projects and experiments within a few months after graduation. In fact things in which the experience of a lifetime of self-education would generally be necessary must be laid upon the shoulders of the young Ceramics graduate. The record of graduate classes of Ceramic school of this country prove conclusively that such work is being carried out successfully.

Students of Ceramic schools find positions as Superintendents of factories making pottery, stonewares, building and paving brick, drain tile, building blocks, sewer pipes, terra cotta, decorating, and floor tile, insulators, mineral paints, cements, etc. Positions of the greatest importance to manufacturers of many high class clay wares such as experimental chemists are held by many.

There is an abundance of clays in Iowa for all the factories mentioned above, but because of the lack of men fully educated such cannot be developed in a scientific manner. The development in the past has been more or less by a cut-and-try method instead of knowing beforehand the exact result. Must we depend upon such states as Ohio, Illinois, New York, and New Jersey for such men? Their departments for this work are always busy educating men for their own use

within the State. How can we expect to receive help from them?

Because of the great amount of tilled land we have little timber left suitable for lumber and we must look largely in the future to other sources for building materials. At the present price of lumber shipped in and with a view to its lasting qualities a wooden building is now almost out of the question. The solution of the problem is either burnt clay or a cement product. The manufacture of these goods must be carried on within the State because of the high freight rates. Should we not have an abundance of men who have the ability to push them?

Iowa's chief source of income must always be from her agriculture products. Her soils are rich and fertile because of the gentle slopes they lie in. These gentle slopes require tile to bring them to their greatest fertility. It is for this reason that Iowa's fields at present are receiving twice as much tile each year as any other State in the Union. It is estimated that Iowa's average of tilled ground was increased 6% during the year of 1906 by the addition of over \$2,100,000 worth of tile. Should not the manufacture of these tile be carried on by men educated for the purpose? If a large saving in fuel might be effected by them, is it not worth while? If such wares can be made of a more lasting quality without additional cost, can we afford to be without them?

The manufacture of pottery, stoneware, and mineral paints, has been carried on with rather indifferent success within our border. The principal reason for their limited manufacture being a lack of men who can solve and understand the complex problems which arise. The writer can find no record of the manufacture of insulators, terra cotta, or decorating and floor tile ever being thoroughly tried. Why should we not add such to the list of our industries and materially increase the State's income. We have the capital but only a few capable men.

The clayworkers need a Ceramic School for numerous reasons. The action of heat cannot be determined with any degree of certainty with our limited knowledge from the physical characteristics or chemical constituents. The actual burning tests must be made. Since actual tests are required should not the clayworkers be allowed the same privileges, as our engineers, i. e., the opinion of an unprejudiced expert who has at his disposal a well equipped laboratory. It is not the purpose of the writer to belittle the observations passed by the test men of the various clay working machinery companies. However, a firm selling machinery for a plant cannot help but be inclined to smooth over matters of difficult moulding, slow drying, small heat range in burning, etc. Had a few of these things been determined definitely for some of our clayworkers many thousands of dollars now invested in worthless plants and apparatus would have been saved. Again should not the clayworkers be given the same laboratory facilities as engineers, farmers, mine operators and others?

At present two distinct courses are given at our State institution at Ames. A two year course for practical clayworkers and ceramists who have had a fair amount of experience along their chosen lines and who are not acquainted with the technical side of their problems. A three years course is given beginners of both the practical and theoretical work. Both courses give a large amount of general engineering as they should, for the problems of the ceramic engineer generally partake a great deal of engineering, of a mechanical, electrical and civil nature. A practical working knowledge of all tests made on claywares is taught. Remedies of fault in clay in moulding, drying and burning are determined. Construction of machines, dryers and kilns are reviewed and studied. In short the student is taught to study out for himself problems which a clayworker making fine or coarse

wares must meet so that he will be able to attack similar problems in a logical manner.

In conclusion, let me ask if anyone here can mention an industry producing one-quarter the value of Iowa's clay products which is not represented in one of our State institutions and supported by State appropriations.

Prof. Marston: I am very sorry indeed that I did not get to hear this paper and consequently am not in a position to discuss it. I can only say for the college at Ames that we believe that such a school is of the utmost importance to the Ceramic industries of the State, and, so far as I can pledge the authorities there, I can say that we are anxious to go ahead and make our school what it should be. This association secured the passage of a law by the State Legislature establishing such a school at the College. I regret to say that we have not the equipment which we should have to make it as valuable as it should be, and I am obliged to appear in a somewhat apologetic attitude before you this afternoon on that account. We have a beginning in the way of a very small number of students registered for the course—I think only a couple or three. We have marked out a regular course of study which, I think, would be of much value to any student taking it, and we would bespeak your co-operation in our efforts to do what we can with the resources which we have at hand at the present time, especially in the way of sending us students whom you think would be interested along this line. We will take them and do the best we can for them; and while I am apologizing for the lack of equipment along this line, yet we have a strong equipment along engineering lines in general and can promise, I think, that the men will get the worth of their money. I really think that the best way for us to get a good start at the Ceramic school is to get some students and get to work, and that the rest of it will be sure to come when you have a start in that way. It is a little hard to arouse enthusiasm to the point of spending very much money when we can't absolutely show that the demand is there on the part of students applying for the work.

I am at a loss to say anything further and I think perhaps I had better stop at this point. I will do anything I can to help out this good cause.

Mr. Lewis: Prof. Beyer is just outside the door and we should like to hear from him on the subject of Ceramics at the Iowa State College.

President Brecht: I presume I had better appoint a committee to escort him in. Prof. Beyer, there are plenty of seats up here in the front row. Our Secretary wants to address a few remarks to you.

Secretary Pratt: Mr. Beyer, I think it is hardly proper for me to address you. I suggested to our worthy President that he ask Prof. Marston before you came in what benefit he thought the Ceramic School would be to the State, aside from educating young men to take charge of clayworking plants, and what he considered the best way to proceed, and what equipment he should have in establishing this school.

Prof. Beyer: Mr. Secretary, you have succeeded in putting some pretty hard questions. I have always considered that a school of that kind, educating young men to take charge of the Ceramic industries, was only one side of it, and that in addition to this side of the question we have always considered ourselves a sort of testing laboratory for the industries in the State. I will have to confess that we have been rather handicapped on account of lack of equipment. We have equipment so that we can do the chemical work; we have equipment enough to make some of the physical tests; but we are almost entirely lacking in the proper equipment to make actual burning tests or actual manufacturing tests anywhere along the line. It seems to me that the most important improvements that we could install at the

present time are those that would permit us to make tests that would at least approximate actual working conditions. One of your members has agreed to help us out to a certain extent in the way of building a kiln by furnishing some of the materials that enter into it. We have a microscopic appropriation to carry on the completion of the kiln; that is, we have \$100. We have another microscopic appropriation to purchase equipment to manufacture clay wares, and we have put in a microscopic order for that equipment, but you must not expect too much of us right away, until more liberal appropriations are made.

Two years ago, as most of you know, a bill was passed establishing such a department at Ames; in other words, simply legalizing the work that we had already been trying to do for the last six or eight years. But, like a good many bills of that kind, it slipped through without providing any of the wherewithal. It was pretty well known at the time that the only way to get the bill through was to leave that clause out, and it was thought better to make an opening than to quit without anything at all to show for the work. It seems to me that we ought to get together now and secure funds in some way. It occurs to me that it is a perfectly legitimate work for the State to take up—just as legitimate as the agricultural experiment station appropriations; and I can't see any good reason why the State should not provide these means to go on with the work and carry it on in the way it should be carried on.

President Drecht: Mr. Straight in his paper was very emphatic that the State should provide or make appropriation for a school of this kind, the same as for mechanical and electrical engineering, etc. I don't believe that we should discuss these matters and go away from here and let that be the end of it. Let us keep after it all the year. Is there any further discussion?

Mr. Thompson: There is just one phase of this subject that I might suggest. When a business man has gone through the activities of life and is ready to drop his business onto younger shoulders, it is often the case that his son, to whom it would naturally fall, is interested in some other line of work. Farmers especially have found this out; they often complain. They have found that by giving the boys a little technical training along farming lines they become interested in that life and take it up. One of the good purposes to be accomplished by technical study in any line is to give the children or the sons an interest in the father's business and make them care for it as they would for any other. I think that is one purpose that it is to be subserved.

Mr. McHose: I can hardly allow this discussion to drop without saying a word. I don't believe that any more important subject can come before this convention than the question of establishing a Ceramic school upon a square and fair basis at our Agricultural College. The State is today spending many thousands of dollars to manufacture lawyers, doctors, and dentists, but she is not doing much to manufacture industrial enterprises, and I take it that the broad State of Iowa needs industrial enterprises as much as she needs anything on the footstool. The Clay manufacturing industry of Iowa is the largest manufacturing interest that the State can boast. It represents more men and more money than any other manufacturing enterprise. In fact, it is second only to the railroads and the farming interest, and I believe it deserves more at the hands of the legislature and the colleges than it has yet received. The fact is that it is up to the clay men of Iowa what they will have. This Association can have almost anything it wants if it will go after it. The trouble is that we have been passing resolutions in good shape and letting them drop. But I can assure you that to get the Ceramic school fairly on its feet, somebody and everybody has got to go to work in good faith and work until it is accomplished. You must apply yourselves individually and col-

lectively, by committees and in general, to establish this Ceramic school, if it is worth our effort at all. It is up to you to say whether it is worthy and is one of the things that we want. I don't think there is any need to discuss that question, in the light of what we have heard. It is more a question whether we will go after it and get it, as we can if we apply ourselves to do the work. Will we do it?

Judge Stevens: I wish to suggest a plan for securing action by the Legislature. The state is politically divided into Congressional districts. A member of the board of trustees of the different institutions is selected from each district. For the purpose of getting at practical work I suggest that this organization select a committee of one from each Congressional district in the State, to be a legislative committee for the purpose of promoting and aiding the establishment of a school of Ceramics and of securing appropriations to support it in connection with the Iowa State Agricultural College. I make that in the form of a motion.

Motion seconded by J. B. McHose and duly carried.

Mr. De Joannis: I would like to say something. I was a little bit slow, but it seems to me we ought to go even one step further than that. The school is established, but it is somewhat in the position of a foundling. The person who wants to dispose of a child places it on the doorstep of the institution where it is supposed to be taken care of and knocks. If the door is opened, the child will be taken care of; if not, it will probably freeze to death. The school is in very much the same position. In this recent motion there is no provision made for any specific sum. I think we should incorporate in that resolution some specific sum to go after. The larger it is, the more likely we are to get something.

Mr. Coutts: I was very much pleased with the paper. I think it hit the nail right on the head. But we have said that before, and we have sat down and done nothing. I don't know but what I might make a charge here that would hurt, and yet be absolutely in place. I will frankly say that I think this organization is considerably to blame because the appropriation that has been talked of failed. A year ago, at the annual convention of the cement workers of the State, I had the honor of being appointed chairman of the Legislative Committee of that body, to work in conjunction with the Legislative Committee of this body. We got together and thought we were going to fix things up. The school, as has been stated, had been established without any appropriation to do anything with, and I thought that we were pretty well organized to appear before the Appropriations Committee and present our case; but when I got to Des Moines I didn't find any clayworkers here. I went to the office of our honored President (who was to represent this Committee by proxy, however) and found that he had just been married and no one in the office knew where he was. Then I tried to hunt up another of the brick men, and I don't know whether he had gone to get married or not, but I couldn't find him. So I went up to the State House alone, expecting I would find my co-workers there. But I didn't, and I had already made arrangements with our member of the Legislature to bring the matter up, and he had secured a hearing for us that day and sent me word to be on hand with all our forces. I was a little humiliated to find no one there but myself. I had a very respectful hearing, however, and presented the matter as best I could from the standpoint of the cement workers, and the clayworkers also, so far as I knew it.

There were one or two things that were working against the securing of this appropriation in which there was no virtue nor merit. One or two members of the Legislature and of that Committee whose homes were nearer some other cities than the city of Ames, got an idea in their heads that this was a move on the part of the Iowa State College to secure another appropriation. I did my level best to disabuse

their minds of that impression and to convince them that the State College had absolutely nothing to do with it, but that the clay workers and the cement workers of the State thought it would be economy for the State of Iowa to establish the school there, inasmuch as there was already a great deal of equipment there and it would be cheaper to establish it there than anywhere else. The Iowa City phase of it did not enter into the question at all. I also tried to impress upon the minds of that committee that we were not asking the State of Iowa for any money as a gift; we were simply asking the State to make an investment that in our opinion would bring back into the State treasury five or ten times more than all it was paying out. We couldn't tell how much of an income the clay and cement industries of the State would bring in but we knew it would be very much greater than we were asking them to expend. I called attention to the fact that the general government had made an appropriation of \$75,000 for the geological survey at St. Louis and had installed a great deal of machinery and erected some buildings, which were simply worth what they would bring for junk. The experiment had been made for which they were arranged and the work was done. On the other hand, the State of Iowa was going to establish something that would be one of the assets of the State and would bring more benefits to the industrial interests of the State than anything else we could think of.

As I said, the Committee gave a very respectful hearing to what I had to say, and a great many of the members pledged themselves to vote for the appropriation. As to why it failed I am unable to say, but I have some notion in my own mind. At any rate it failed; and since this matter has come up again, I am sure that I can say positively for the cement workers of the State that they are willing to do everything in their power, and will do so, to co-operate with the clay workers to make the very best showing possible; and it behooves everyone of us, as men that are interested in the industries of our State, to see that no stone is left unturned but that this matter is presented in the strongest way possible to our next Legislature so that it may be brought to a successful issue.

Judge Stevens: I desire to explain a little more fully why I moved the appointment of a Committee of one from each Congressional district. I suppose there is not a Congressional district in this State but has some member of our Association in it, and he is more familiar with the men from that district who will be in the Legislature than a member of the Committee outside of that district, and can bring greater influence to bear upon them. For instance, Mr. Dennison or Mr. Stephenson in the 4th Congressional district probably know every member of the Legislature from their district. They can approach them and get time from them to explain this matter and fully inform them as to its importance. Mr. Holman, in the 11th, well known all over that district for years, would be a man of influence there to bring that about. And so I might go over the whole state. Take the 7th Congressional district: here in Des Moines we have several men of influence, well known all over the district, in our organization. They can bring to bear more influence upon the members of the Legislature from this Congressional district than upon those outside. Therefore, if a Committee of eleven—one from each district—goes at this work systematically, working with the members of the Legislature from their respective districts, they can accomplish a great deal.

As to suggestions with regard to the amount that we should ask for, there is not a member of this Convention who has given that any study. We haven't even asked our visiting members from the school yet, and we are in no shape to name the amount that is necessary to carry on that school.

That is a matter for the Legislature anyway, and when they determine to do it they will call in the President of the Board of Trustees of the school and consult in regard to that. It has been explained by Prof. Marston and Prof. Beyer that a large part of the equipment necessary to carry on this school is already there. The State is paying the wages of the teachers in all those departments, but they haven't anything to conduct the practical experiments with; they haven't their laboratory so to speak. The chemist has his laboratory, the agricultural chemist has his, and the teacher in fine stock has his pavilion and his fine herds of different cattle to explain in the course in animal husbandry to the agricultural student; but the man in Ceramics has no test kiln, or clay or coal with which to burn it or the proper supply of tools. When we inform the State of Iowa or its representatives what we want, we will get it and that is why I moved to appoint a committee so spread out and located as to bring about in the shortest time the best results.

Mr. Stoll: Mr. De Joannis has suggested that there ought to be some amount set. I have had some experience in that. We had the matter up, I think, at the meeting of the last Legislature, and were assured by some that we were going to get an appropriation. When the Legislature met there were a lot of fellows from away down in Egypt that never heard anything about a clay school or about this thing that we were trying to bring before them; and when we asked for some money they turned us down and said they were spending enough money up there. We heard of it in time, and I think a great many of the members of the Association sat down and wrote personal letters to their representatives calling attention to the fact that we ought to have this clay school and showing what it did for the young people; and we said we wanted \$15,000. They did like lots of Legislatures: cut it through the middle and gave us \$7,500.

You must ask for something and show these people that you have got to have it. You can't do all these things on wind; therefore, if you are going to start at it, don't ask for \$1,000, because they will cut it in two anyhow. You might just as well ask for \$10,000 a year, and then you will be apt to get half of it. But my suggestion is that every member of this Association write a personal letter to the representative from his county. Don't think, "I will write it tomorrow," but do it right away, and make it as strong as possible. Tell them what you must have and what it is for, and then afterwards have your Committee go around and see them. That is the way to get it.

Mr. Beer: I agree fully with Judge Stevens in the appointment of a Committee from each district, and I believe with him that this Committee should act in conjunction with the instructors and professors at Ames before any amount is asked for. I believe that they should make up estimates of what they require; and they can do it better in conference than we can here without any deliberation. In presenting their estimates it is better to itemize what they want than to ask for a lump sum, as Mr. Stoll has suggested. I would further suggest that this Committee be a special Committee, and that it act independently of the Legislative Committee, and that it does not include any of the members of the Legislative Committee which has been already appointed. I would make that as an amendment.

Mr. Gethmann: I am in favor of the gentleman's motion as it has been acted upon. If these brick-makers were to set the sum that is required in the school at Ames, or anybody outside of the professors, I think we would fare somewhat like the schoolma'am that gave a problem to one of her pupils. She said: "If a hen lays 15 eggs in one day, how many will she lay in thirty?" If we were to set a sum for the Legislature to act upon, we might get it just about as near right as that. I think the suggestion that Judge Stevens

made of leaving that to the Legislature and allowing them to invite the Trustees of the school in is a good one. They would get that in proper shape so that it would appear all right to the Legislature.

Mr. Coutts: I would just say for the information of these gentlemen that have been talking that this joint committee did have a meeting with parties that expected to put this work through, and we decided that the amount necessary was \$10,000 for the establishment of the school, and \$2,500 annually for maintenance. But, unfortunately, the day before we presented the matter to the Legislature, that body had passed a resolution refusing to consider any appropriation after that date that reached the amount of \$10,000. So, in order to get a bill before the House we asked for \$9,000 for establishment and \$2,500 for maintenance. That is the way the matter stood last year.

Mr. De Joannis: I don't think the members appreciated that I was not trying to upset the chronological sequence of the work. Judge Stevens' suggestion is excellent, and absolutely necessary in carrying out the work. It involves a co-operation which has been lacking, and in no other way than Judge Stevens suggested can we hope to have such leverage upon the people whom we directly desire to interest as by the method involved in the motion. But there is one thing certain, and that is, that if these eleven men are going to do their work right, they must know what they are going to talk about. To go around in a sort of a hazy way and suggest Co-operation for the Ceramic School or for the purpose of maintaining it doesn't give anybody very much backing.

I had probably as much to do in bringing about the Ceramic School at the University of Illinois as any other people—at that particular time. Other people had worked four or five years before I started in. But after I did start I found out that if anything was hindering me it was lack of knowledge as to what it was necessary for the school to have. It was one thing to talk up the advantages and another thing to know what was necessary to secure these advantages. Our special necessity right now is to have an understanding with our school friends—Prof. Beyer and these other men who have been of so much assistance to us—as to what they need, and then in our private talks we will be able to impart the knowledge that they have given us. For that reason I suggested naming the sum, and I still repeat that if we are going to act in any way which is to be effective we must not go around to these people with a fairy tale of the needs of the school.

Judge Stevens: Put your idea in the form of a motion and I will second it.

Mr. De Joannis: I would like to allow Prof. Beyer to take his feet now and suggest to us what is necessary, and then if Judge Stevens will very kindly add this to his motion, I will gladly second it.

Prof. Beyer: In order to install the plant properly we have to have some means for housing it. We haven't rooms adapted for the purpose. Last year we figured on the minimum amounts that we could possibly do anything worth mentioning with. Those were not the amounts that we would have liked to have; they were what we thought we stood a reasonable chance of securing, and that would yet permit us to do the work. My opinion was that \$10,000 would be the minimum figure to provide the proper housing and machinery, and that we could get along with \$2,500 for maintenance, as we were not going to draw on the account for salaries. We didn't make any provision whatever for special instruction or assistance. That sum was for the actual materials that we would have to use or that would be charged to expense account. But it occurs to me that this is not what we ought to ask for maintenance, but that we ought to ask for \$5,000, so that we could have one man who would

devote his entire time to this kind of work, besides one or two others that would devote part of their time. That would care for one salary and perhaps part of one or two others, in addition to the expense. I can't itemize that offhand, but I shall be glad to do it. It should be \$10,000 for installation and \$5,000 for the annual expense.

Judge Stevens: I move then that the Committee be instructed to ask and work for the appropriation of \$10,000 for equipment and \$5,000 per annum for support and instruction.

Mr. McHose: I appreciate the value of having the amount, but in the first place let us consider that the Legislature does not meet this present year, and it will be a year hence. Our Committees will probably be better instructed at that time than they are now, and I think they are amply able to fix the amounts at the time they want to commence work rather than at this time. Why not leave that to the Committee, with all the advice and judgment that they will have? They must always consider the questions of discounts, as has been remarked, and that has also to enter into the computation.

Here is another question; it is a practical question before us. We have a Legislative Committee. I am not advised what the life of that Committee is and I don't know when it's term expires or commences. Possibly I can be informed. I was not at the last annual meeting. But it is evident that the real work (although some of it must be prepared beforehand) must commence about the first of January next, before this meeting will probably convene again. At the same time the work of the Committee will be protracted through a year from this spring; and I assure this convention that if we get this bill through the Legislature it must be by the work of the Committee then and there, in addition to all the help we can get from the Congressional districts.

Mr. Beer: Why would it not be well for the Committee to ask for a minimum of \$10,000 for installation and \$5,000 for maintenance, and increase this amount if in their opinion it is necessary?

Mr. Platt: I would suggest as Iowa is the finest State in the Union, that this Committee ascertain how much money the very best Ceramic School in the United States needed, and then ask for that much for Iowa, and tell them that is what we must have.

The President: Do you move that as a substitute?

Mr. Platt: Yes.

Mr. De Joannis: I am against the substitute. You can ask for a million dollars if you like, but I don't think you will interest the Legislature very much when you talk about that. I believe we should be conservative. I think the work in Illinois took sixteen years on the part of Prof. Rolfe and one or two of his assistants in the University. It took twelve years to get the clayworkers worked up to a sufficient degree to even write letters; and subsequently it took four years' hard plodding to get the bill through. I agree with Mr. McHose that a year from today they will be better informed than they are today.

Judge Stevens: I understand from Dean Marston that the amount suggested here was ascertained last year with some care, and it was thought that it was a very fair one to ask for. I don't believe it is helping anything to discuss the amount. I don't know as it will help any to pass this motion; but we are not going to get any closer to what we need than the amount these gentlemen in the school have suggested.

Mr. Hansen: Why not get Mr. Marston, who is a pretty good hand at figures, to make an itemized statement of that cost and show it to the members of the Committee? I have a superintendent of my tile works and when he comes to me with a request for money I want to know where it is going, and the next thing for him is to make out an account and



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show me how feasible it is. It is simply a business proposition, gentlemen, to show the Legislature what you want.

Mr. Platt: I am perfectly willing to withdraw my amendment to the motion. In the first place I am entirely favorable to leaving it with the Committee.

Mr. De Joannis: I second Judge Stevens' motion.

The President: You understand the motion, I believe. Is there any further discussion?

Judge Stevens: I will withdraw my motion, with the consent of my second. I am satisfied that it is better to leave it as it was.

Mr. De Joannis: I withdraw it under protest.

The President: In appointing this Committee I will try to confine myself to gentlemen who have heard this discussion. I will do that tomorrow. If there is nothing further on that subject, we will pass to the next item on the program: "Comparative Value of Large Tile over the Smaller Sizes," Prof. F. M. Okey, in charge of Engineering Experiment Station, Ames College.

#### COMPARATIVE VALUE OF LARGE TILE OVER THE SMALLER SIZES

The time has come when every farmer and land owner should know every why and wherefore of under-drainage and tile drains, from the most rudimentary principles to the higher knowledge and practice. The old slipshod method of laying a line here, another there, and still another in another location to drain out some pond or marsh, irrespective of fall or size of the tile required, is fast becoming obsolete, and the wide-awake progressive farmer of today is substituting there for, a systematic study of soil formation and the topography of the soil to be drained. Or better still, he employs a competent drainage engineer to make the necessary surveys and stake out the work, resting secure in the assurance that if the system is put in as planned, all superfluous water will be taken care of, and that increase in crops and higher valuation of the land will result.

However, we may still find quite a number of "stand patters" for some of the old methods. Just recently I talked with a man who urged that the water method of determining a grade line established by an engineer was only "approximate" and not to be relied upon. Applying this to one or two examples of drainage engineering that I have recently come across, it must be admitted that his argument on this one point at least is especially strong. But I believe that as a usual thing, the grade line established by an engineer is to be relied upon not only to carry off the water, but to leave the bottom of the trench in good condition to give a firm bed and true alignment to the tile, which is considerably more than can be said of the old water method of grade determination.

But as regarding methods of tile manufacture it would be decidedly presumptuous for me to assume that I could tell to men of your maturity and experience anything that would be new or interesting. It but remains for me, the engineer, to make a few mild suggestions as to what I would like to have in the way of size and length, and to arrange as best I may in the way of "covering up" of the defects in your output.

Relative to the length of drain tile there is little to be said except a rehash of what has already been said on the subject. The length most commonly in use is 12", at least for diameters of 12" and less, and any additional length would not be of very great advantage. Where the drain in question are trunk lines of large diameter and run for considerable distances, tiles longer than 12" may be used with best results. The reason for this is easily apparent. Much of the water carried by the trunk lines is received from the lateral drains emptying into them. Trunk lines are usually put in more to carry off the water collected by the laterals than for actual drainage, and it is not necessary that there be many joints to receive additional water. And if there were water

to be removed along the line of the main there would be sufficient openings to take care of it, owing to the increased length, even though the tile were 2" in length, and to the increase in actual area of opening at each joint, due to the increase in circumference of the large tile over that of the small tile in the laterals. So, for long drains, tiles longer than 12" are to be recommended, as they are somewhat more easily laid and are not so likely to move their position in a long drain after having been laid. Otherwise, the long tiles have but little superiority over the short ones.

Taking up the discussion of the sizes of drain tile and more specifically the advantages of large size drain tile, I seem to be entering a field of unknown area and possibilities. It took but a very superficial study of the question to convince me that I knew very little about it, and after an exhaustive search through books and papers on tile and tile drainage, I am of the opinion that no one else knows much more, or if they do, they have not given the public the benefit of their knowledge.

At one time, a tile which had an inside diameter of 1" was considered sufficient, but today a tile is not considered of adequate bore unless it is at least 3" in diameter. The general consensus of opinion among drainage engineers seems to be leaning toward larger sizes, and this is so far affecting the situation that a few of the tile companies will not give quotations on a size less than four inches. The advantages of the larger sizes may be readily seen when we consider that in many soils and strata, there is more or less water coming all the time from underground springs which would fill the smaller tile nearly or quite to their capacity, but is nothing to be compared to the water around them after a heavy rain, or during spring thaws. The water runs off so slowly that it has time to thoroughly chill the ground. The result is wet ground for a considerable period of time, and delayed agricultural work, while if larger sizes are used, the surplus water is carried off easily and quickly before it has time to do any damage by puddling or chilling the ground. The size depends, largely, of course, upon the area to be drained and whether the line is a lateral or trunk line. A quick relief from surplus water is necessary to some soils, for if allowed to become saturated, they become hard and cracked when heated, a condition to be avoided if possible.

Considering that a tile of 3" internal diameter is the smallest size that should be used under any circumstances, and using it as a basis of comparison, let me present a few of the apparent advantages of the larger sizes.

The cross-sectional area of a 3" tile is 7 and a small fraction square inches; that of a four inch about 12 and a half square inches, that of a five 19 square inches, and that of a six 28.27 square inches, or just four times that of a 3", though the diameter is only twice as great. In fact this is true of all tile; double the diameter and the cross sectional area is four times as great. Assume that enough dirt has entered through the joints and at the end of a 3" tile to fill it, and thus completely destroy its efficiency. As just mentioned the 3" tile has a sectional area of a trifle over 7 square inches, and the 4" an area of practically 12 and one-half inches, or about 86% more. If this same amount of dirt entered a 4" tile it would fill it only a little over half full, or to speak exactly 58 1/3% full. There might enter here the possibility that more dirt might enter the tile of larger size owing to increased circumference and area. But with the precautions taken, there is not much chance of this. However, if we allow that 25% more dirt gets in, which is a very high estimate, unless it be at points on a curve where the outside of the line has the joints open a trifle, and the 4" tile would still be only a little over 70% choked, leaving an available waterway of 30% of its area. Not much to be sure but still a great deal better than a 3" tile entirely choked up. But

assuming that enough water is to be provided for to fill a 3" tile, this same amount in a 4" tile would have a slightly increased velocity of flow, and have thus a greater tendency to wash the dirt out. Perhaps not near all of it, but certainly much more than would be washed from the 3".

Allow me to go further and compare the 3" tile to that whose diameter is 5". The 5" tile has a sectional area of 19 square inches, or 2.7 times that of the 3". Therefore the dirt that would fill a 3" tile full, would fill a 5" only 37%, or a little over one third full. We might assume that an additional 25% of dirt enters. The 5" tile is still 4" less than full and has an available waterway of 1.5 times that of a clean 3" tile.

Comparisons may be made still further by comparing the 3" tile with those of still larger diameter than those mentioned, the 4" with the 5" and 6" and so on, but we are concerned chiefly with the smaller sizes in this part of the discussion, namely the 3", 4" and 5".

Then the larger sizes have an economic value relative to cost. According to a table compiled from formulas recommended by Mr. C. G. Elliott, drainage engineer to the United States Agricultural Department, a 3" tile laid at a 25% grade, or a fall of  $\frac{3}{4}$ " per rod, is adequate to drain 5 acres. But a 4" tile laid at the same grade will drain 10 acres. In other words it has twice the capacity of the three inch tile. So if we found that there was a little too much water for the three inch tile to carry away, we could be sure that a four inch tile would have no trouble in taking care of all of it. The computations for making the above mentioned tables are based on the assumption that the tile removes  $\frac{1}{4}$ " depth of water per twenty-four hours.

Assuming that a tile is effective one rod each side for each foot of depth in ground, and that the tile is in four feet, it will drain a strip eight rods wide. In the case of the three inch tile which drains five acres, the line will be 100 rods, or 1,650 feet long, and the line of four inch which drains to acres will be twice as long or 3,300 feet. So if we wish to drain ten acres with 3" tile, it will be necessary to put in two rows of them eight rods apart, running 1,650 feet, the length to which we are limited. But when we come to this end of this length, it is necessary to either increase the size of the tile or to put in intercepting drains. If the former, it will not be possible to run them half their available distance until it will be again necessary to increase the size. If the latter there will be the increased cost of the intercepting drain. Furthermore, if the smallest size is put in at the upper end of a system, it will never be possible to make any extensions in that territory without going to the greatly added expense of taking up the small tile and replacing them with the larger ones, very likely causing a revision of the entire system, which is decidedly more expensive than putting in the larger size in the first place, even at a greater cost. About how great this increase is, may be drawn from the following:

Based on actual cost and compared as to the cost of unit area, using the area of a three inch tile as the unit of comparison, there is an advantage in favor of the larger tile. The four inch tile cost only 20% more than the three inch, but has a sectional area eighty per cent greater than the three inch. The five inch costs 60% more than the three inch and has a sectional area greater by 2.7 times that of three inch. Also the five inch costs 33 1-3 more than the four inch but has a sectional area 60% greater than the four inch. Superficially, a case of getting more for your money by buying the larger tile. But when it is considered that there is a less likelihood of the larger tile choking up; when they will remove the water more quickly; when they will drain a larger area per given length of tile, and when there is practically no difference in the cost of laying the smaller sizes from the

six inch down, the economy of the larger tile is easily apparent. There are of course places where it would be folly to place tile of small diameter, such as bogs, swamps and marshes, or where there is considerable surface water likely to fine entrance. In such cases there is continually such a large supply of water to be removed that it would take several lines of the small size laid close together to provide an ample waterway. Considering the added cost of extra ditching in such places as well as the added cost of the extra tile, the economy of the larger tile is at once observable. Quick relief from surplus water is what is wanted in every case and such relief will be obtained only by using the tile of large diameter. So, in view of all that I have said, let me urge that no tile be put in that has a diameter less than four inch, or if there is the least doubt about that size being adequate, put in a five inch. I have confidence in this statement not only because of my own belief, but because some of the prominent drainage engineers are advocating this and requiring the use of sizes larger than three inch, and by the fact that fewer three inch tile are being used every year. So much for the advantages of large tile over small ones.

Turning our consideration now to another phase of the question, I would like to present a few points wherein a very large tile has the advantage over an open ditch. I will admit there are places where an open ditch is the only kind of a drain that can be used and that the drainage of some sections of country would be out of the question if a drainage ditch could not be used. But with the manufacture of the very large size tile, a diameter of thirty-eight inch being about the maximum, we are able to provide a means of discharge for an enormous amount of water. So when we find a district too large for the largest size, nothing short of a small river will care for the surplus water.

Referring again to the table giving the area drained by the different sized tile, I find that a twenty-four inch tile laid at a 2% grade will drain about 2,600 acres. The smallest ditch that will care for the drainage of such an area is four feet deep, has a grade of 6%, has an average width of water of six feet, and is about .2 feet wide on top. This is based on the ditch running three-fourths full, or having in it three feet of water in depth. Take a tile 36 inches in diameter. This has an area a little over twice as great as the 24 inch and a discharge about 2.25 times as great, or will be effective in draining about 6,000 acres providing that it is laid at the same grade. The smallest ditch that will drain this area is 4 feet deep and 16 feet wide and has an average width of water of 8 feet, the grade being the same as in the first. The first cost of these ditches is low compared with the tile but that is not all to be considered. A ditch 16 feet wide on top takes a strip about four rods wide that is not available for farm land, which means an acre for every 40 rods of length. Of course this is not to be counted if the ditch is necessary to make the land tillable along it, but if it is only an outlet, it is decidedly expensive. The open ditch requires constant care to keep it free from weeds and dirt caving from the sides which greatly reduce its efficiency. There is also the added danger of an overflow which may cause an inestimable amount of damage.

With the use of the tile all these disadvantages are eliminated. When the tile are once in the ground all expense ceases, for there is no maintenance required. They do not deprive the farmer of the use of several acres of valuable farm land, for the land may be cultivated immediately above the tile, and there is never danger of overflow, so I believe the greater weight of the argument is in favor of the tile, even though they may be more expensive when they are first put in.

In conclusion I would like to mention the fact that some of the points which go to decide which is really the best size

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of drain tile to use, are as yet unsolved problems of engineering. Many items involved in working out some of our conclusions are merely reasonable assumptions and not established facts. I will mention those which appeal to me as bearing most strongly on the question.

It is not known definitely how far a tile is effective on either side, nor how deep it should be placed in the ground. Neither is it possible to say definitely to day how much water in inches of depth we can reasonably expect a tile to remove during 24 hours, or whether or not the tile becomes more efficient after an extended period of time as claimed by some. So far as I am aware there is practically no data upon any of these points.

In order that some light may be thrown on these things, the Engineering Experiment Station of the Iowa State College is carrying on a series of experiments on two drainage systems, from which we expect to determine, by a system of pipes for determining the fluctuations in the elevation of the ground water, and weirs to measure the actual quantity of run off, whether or not the assumptions mentioned above are as reasonable as they seem, and if they are not, just where the fallacy lies. This experiment has been in progress for an extended period of time, and we have no definite results to say as yet. However, it is hoped that by this time next year, enough data will have been collected to justify a report on the subject. I am sure that the experiment will be of great interest to every one concerned in drainage work, either directly or indirectly, and that the report of the results will be awaited with considerable anticipation.

President Brecht: I will ask Mr. Dennison of Mason City to lead in the discussion of this paper.

Mr. Dennison: Mr. Chairman, it seems to me that Mr. Okey has pretty thoroughly and fully covered the question; I don't know that I can add any information or suggestion. I might say though that we have cut out all under three inch tile. We discovered that the sale of smaller sizes was a damage to our business, because it invariably failed to do satisfactory work. We discovered, as have all of you who make tile, that the man who drains his land starts out with the very smallest tile he can buy, regardless of whether it will do effective work or not. If he could get a two inch tile he would use it, because he has no practical knowledge of the results. We have systematically endeavored to increase the size of the tile being laid. We have endeavored to educate our customers as far as possible along the line of using a larger tile than the engineer would dictate. The engineer as a rule goes by some data furnished him in a pamphlet, like that put out by the Agricultural College at Ames. The tables prepared by the professors there are based upon running off one-quarter inch of rainfall in each 24 hours. Of course the engineer assumes that those tables are correct. Undoubtedly they are; but the practical result is that when you get an inch and a half or two inches of rainfall and run off half an inch in 48 hours, the crop is spoiled before the water runs off. The only remedy is a larger tile or a steeper grade. The grade is not always available, but is fixed by the natural conditions. I think the idea should be put forward by this Association as largely as possible, and that we should encourage the professors at Ames to enlarge the sizes of drain tile—I mean to inculcate that idea; as ultimately the man who uses it is benefited, although temporarily he may think he is paying more than he ought to. I think it is the observation of almost every man in the room that the drain tile are almost invariably too small.

from Ames as to how much a drain tile helps the land aside from drawing out the water. My theory is that the tile draw a certain amount of air to the subsoil and makes it that much better. If that is the case we have overlooked this point, and I would like to have it investigated closer.

Prof. Marston: On this matter of the size of the drain tile I am going to make a very frank confession, and that is that we do not know just how large those drain tiles should be, for the reason that no one has ever gone to work and put in some method that measures the amount of water that runs off from a system of tile. The only measurements that I know of were made by Col. Waring before he became famous, when he was interested in tile drains in the East. The actual practice in laying out of drain tiles at the present time is largely a matter of judgment with the different engineers and tile ditchers through the State and other States. You might say that it is a matter of experience, because these drain tile so drain the land, and that is all that you can say for it. You can only say that two men will have the utmost divergent ideas about the size of those tile.

I was interested in what Mr. Dennison said, and his experience coincides somewhat with my own observation. On the other hand, we sent out a series of circular letters to drainage engineers through the State inquiring, among other questions, about drainage, what they thought about the drain tables. Part of them responded that they were using them and thought they were about right; and others responded that the sizes were altogether larger than needed, ranging up to three times as large as they should be. We are starting the work to find out how large they should be. Down near the College and in another place in the northern part of the State we have set to work on the matter and we are going to keep track of the results. We have been doing that for a year in a preliminary way, as I mentioned to the Convention a year ago that we had planned to do. Also we are taking up this question which this gentleman referred to; that is, we have set at different points, extending out from the tile drains, a series of 3-4 pipes, perforated, so that we can measure down 24 hours after a rain and 48 hours after, or at such times as we wish and find how deep the water is standing in those pipes; that is, how far the water has been drawn down by the tile. We have been doing that also in a preliminary way for the last year, and expect to get some information from those two particular places showing just how far the water is drawn out of the soil.

Further, in regard to this question which was asked, I would say that this breathing of air through the pores of the soil, is as I understand it, one of the most important things in connection with the successful growth of crops. The air in the ground is not in a state of rest, as most of us think of it. It ought to be regarded almost as a pair of lungs. The air passes into it and out of it, and that interchange of air between the soil and the air above it is one of the things necessary to successful plant growth. I believe that the tile promote that, both by removing water which otherwise fills the soil, just as a person's lungs get filled up by certain diseases, and in another way by actually providing channels in which the air can circulate underground.

But on these points we plead more or less ignorance, and we also say that we realize that it is the first step toward finding out something better.

Mr. Gethmann: I would like to ask if there is any great difference between porous tile, that will permit the water to run through the tile, and the vitrified tile of the same size, and if it is not the case that a vitrified tile, which will not permit any water to run through the tile itself except at the joint, could be very nearly choked up in sticky clays, where the clay would have a tendency to close up the joints so tight as to permit very little water to run through?

Prof. Okey: As far as I am concerned in this matter we don't consider that any water is expected to enter through the tile itself, but entirely through the joints. In respect to getting entirely clogged up in sticky clay, I am not prepared to give any information on that subject, but I am very firm

in my stand that no man who is selling tile could sell any to me that were porous enough to allow water to run through. I read an article some time ago in which some man had asked a division superintendent of a railway something about the use of tile. He said that he took a number of tile and put them in a basin of water, and the one that soaked up the most water he thought was the best one to use. I am of the opposite opinion. I would prefer a tile that is thoroughly vitrified, because I believe that no matter how close we try to lay the tile, there are enough projections, and it doesn't take very long until the cumulative area is a great deal more than the tile itself.

Mr. Hansen: I commenced tiling in 1871 and have kept a kind of tab on it ever since. I used to live over in Illinois, but sold out and came over here. Once in a while I go back there and look over the old fields that in 1870 we considered entirely worn out. They wouldn't raise but 15 bushels of corn to the acre. Now I find that they raise nearer 50. What has brought that about? They hadn't used any fertilizer to amount to anything. Nothing else but tile draining. When you study the substance of rainwater you find that you have in it more fertilizer than you would begin to put down, and therefore the ground should be drained. We should not let the rainwater stand on the ground, but flow through it. Those tile drains were put into hard clay soil—the Irishman said it was as hard as the hammers of hell—and they keep getting better every year. I think our tile hardly ever run over three months of the year, and the balance of the time the air is working. To what extent that is beneficial we want the professors at Ames to look up for us.

President Brecht read a communication from Milo Ward, Secretary of the Commercial Club, inviting the members of the Association to take a ride over the Inter-Urban line to the Flint Brick Company's plant at any time on Thursday convenient.

Upon motion of Mr. de Joannis the invitation was accepted and Thursday morning at eight o'clock named as the hour for making the trip.

Secretary Pratt: I wish to state to the members of the Convention that there is an Association in Los Angeles that has taken up, as you have probably noticed in the clay journals, the effect of the earthquake and fire in San Francisco on different constructions. They have gotten up an elaborate book which they are suggesting to the different Associations that the individual members thereof take hold of and draw the attention of the building public to. We have a copy of that book which will be on the Secretary's table in the headquarters room and will be a very interesting thing to look over, and perhaps it would be well to look into it carefully.

The Convention thereupon adjourned to 10:00 o'clock Thursday.

#### INSURANCE PROTECTION CHEAPER FOR THE MAN WHO BUILDS THAN FIRE- PROOF CONSTRUCTION

Columbus, March 19.—State Fire Marshal Creamer says the aggregate of wealth in the congested value districts of our cities has become so great that the capital of the insurance companies, home and foreign, is inadequate to its protection. This makes it instantly imperative that serious errors in architecture should be remedied. There is urgent need that this matter be considered by legislatures, municipal governments, boards of trade and manufacturers' associations.

The amount of insurance carried on one block in Cincin-

nati is \$3,744,000; in Cleveland \$3,500,000, and in Columbus, on Chittenden hotel block \$2,850,000.

The common faults in buildings which invite conflagration are:

- Open stairways and elevator shafts.
- Internal openings in brick dividing walls.
- Absence of fire shutters, of metal sash, with wired glass.
- Low parapet walls.
- Shingle roofs.
- Hot air and steam pipe too near wood.
- Unprotected metal floor supporters.
- Chimneys less than the length of a brick in thickness and unlined with burnt clay or terra-cotta pipe.

Each of these errors in building, except the chimney, can be corrected for a sum the interest on which would be much less than the saving that would result from a reduction of the insurance premiums, for each of the above mentioned defects is charged for.

The vertical opening is the greatest producer of total losses because it furnishes an inflammable flue for flames.

Openings in divided walls should be furnished with automatic iron doors or filled with brick.

Either metal sash with wired glass or tin-clad shutters should be placed in exposed windows. A wooden shutter covered with tin will not warp from heat so as to let in sparks, as an iron shutter may.

Parapet walls should be built up to three feet.

Stairways if enclosed should be fitted with spring doors; if not enclosed they should have trap doors.

The shingle roof adds so much to the insurance rate that one cannot afford to let one remain on an expensive building.

Wood should be cut away from hot air and steam pipes. Either may become red hot. Against wood they convert the surface into charcoal and then fire it.

Metal pillars or joists if not protected by some burnt clay product or concrete, spring when heated and let down the ceiling of the burning room.

A conflagration danger that it is hardly worth while to preach against is the immense size of rooms in wholesale and department stores. A partition will ordinarily hold back a fire until the firemen can get water to it. Such rooms should have sprinklers.

It is intelligence rather than expense in building that secures the lowest insurance rate. One about to build should gather information as to the influence of material and detail of architecture on the fire danger and the insurance premium. The threatened exhaustion of our timber supply is an ill wind, to be sure, but it blows in one good by making lumber so expensive that it is economy, all things considered, to use fire resistive material for nearly all buildings.

Ordinary joist construction costs about 1½ cents for each cubic foot. Slow burning or "mill" buildings, in which floors are thick enough to resist fire until the fire department has ample time to get to work, costs 14 cents. Reinforced concrete with external walls of brick costs 18 cents. Fire resistive construction with steel skeleton and brick curtain walls costs about 20 cents a cubic foot. Since the San Francisco conflagration the term "fireproof" has given way to "fire resistive construction" in the vocabulary of the architect.

The New York Blower Co., 25th Place and Stewart ave., Chicago, will show their method of drying clay goods if they are given an opportunity. See what they have to say on page 42 of this issue.

## CLAY RECORD.

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No. 6

"I like to read American advertisements. They are to themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

"Advertising is not an expense, but a business economy."

Tomorrow is the stone over which many a business man has stumbled.

Flatter a man and he will forget it the next day; abuse him and he will remember it as long as he lives.

Some men are so smart in a business way that people do not care to do business with them the second time.

The reason some men like to get home at night is because of the pleasure it gives them to go away again the next morning.

"The primal and best sustained claim for concrete is that it is an artificial stone. We all know what stone of any kind will do under fire."

"With all the dross of long discussions burned away the quality of a good drain tile is this. To keep a hole open through the ground and to keep right on keeping it open."

"Unlimited tests, common sense, and close investigation of the material when actually under fire, satisfied me when still young that concrete was only as fireproof as its chief ingredient."

Hurry up—Subscribe for the Clay Record today. Send in your money in the form of checks, money orders, express money orders, stamps or one dollar bill, anyway to get it to the editor.

The trade paper is the best "Booster" that the salesman of today possesses. No matter whether a man is on the street, on the road or behind the counter, the trade paper is working for him day and night. It is inspirational and is a medium of expression for his views and for the interchange of ideas. It helps the road man because it introduces his goods to the prospective buyer before the salesman gets to him. In this way it lessens his task and prepares the way. It keeps the retailer posted and abreast of the times so that the salesman has less trouble in finding the middle ground on which to meet him.

## U. S. STEEL CORPORATION BEATS INDUSTRIAL RECORD

Is it possible for a company to earn \$757,014,768 in one year? The annual statement of the United States Steel corporation has answered the question in the affirmative.

The yearly report, submitted to its 150,000 stockholders today, showed that the organization's gross income had reached this tremendous total, the largest amount ever made by a single industrial association, transcending the earnings of the Standard Oil company by many millions. The sum compares with \$66,758,928 in 1906, which was considered a zenith of the concern's earning power.

The net returns for the period ended Dec. 31 were \$160,964,674, or \$4,250,000 in excess of the same item in 1906. The company's document states that \$19,343,230 was expended on the plant at Gary, Ind., and that \$9,000,000 was paid for the Tennessee Coal and Iron Company. The shipments of products were 10,451,488 tons, while 1,014,082 tons of the corporation's output were sold abroad.

The management, among other expenditures, put aside \$1,000,000 for the benefit of disabled employees and this fund is to be increased from time to time. Though business fell off sharply after the October panic, orders in January of this year were 25 per cent in excess of those of December, and February's increase was 25 per cent ahead of January. So far this month the daily enhancement has been 24 per cent over February.

This indicates to the officers of the company that trade in general is reviving.

## BRICK BUSINESS IS BOOMING

"It may sound strange," said a representative of an Olive Hill, Ky., fire brick company, who was a caller in Portsmouth, Ohio, "but it is true, nevertheless, that the shortage of work in other lines makes our business pick up."

"The reason is that factories and mills with coal burning furnaces take advantage of their idleness to repair their furnaces and these repairs call for firebrick."

## OBITUARY

Charles Crispin, a clay pot manufacturer, died at his home in Findlay, Ohio, from a stroke of paralysis. He was 45 years of age.

Anthony Wagner, who has been engaged in the brick making business for nearly 40 years, died at his home in Dearborn, Mich. He was 74 years of age.

William Drake, for over thirty years a well known business man in Milwaukee, Wis., and president of the Cream City Brick Co., died at the age of eighty years at McKinley, N. Dak.

### SOME MANUFACTURERS WILL DELAY WORK UNTIL JUNE

It is learned from reliable sources that the Berlin (Ct.) brick manufacturers have come to an agreement at a recent meeting of the Federal Brick Company in New Britain not to commence manufacturing this season before June 1st. This decision was reached owing to the large quantity of burned brick on hand and the existing business conditions, which at present do not warrant the belief that there will be any great amount of new work started in the construction line this spring. It is hoped, however, that things will brighten up before July 1st, when it is anticipated enough brick will have been sold and delivered to permit of the unhampered resumption of work at the yards.

This decision, however, does not affect the independent yards and preparations are already under way at several of these to commence operations early next month. Hotchkiss Brothers, who own the Berlin Brick Company, have already commenced to pump out their clay pit preparatory to opening the manufacturing season. At the M. E. Jacobs yard in Beckley Quarter they are unloading the new overhead trolley bucket system which is to be installed there for use in conveying clay from the pit to the machine. They expect to start up their yard early in April as do also the American Brick Company at the same place.

### THE HUMBOLDT BRICK COMPANY WILL BRANCH OUT

The Humboldt (Kansas) Brick Company has made arrangements to extend its plant so as to include the manufacture of farm drain tiles, hollow brick and fire proofing. The work of installing the additional machinery will begin at once.

The company will build an addition thirty-five by forty feet in size to its machinery room and an additional dry room thirty by sixty in size. Additional machinery will be added and it will be possible to keep up with the orders for drain tile and fire proofing which come frequently with orders for brick.

The addition will necessitate an addition of fifteen men to the present force, making a total of forty-five men employed by the company. The Humboldt Brick Company was the first manufacturing enterprise to locate in Humboldt after the discovery of gas and is owned entirely by home capital. It has been active in the development of the resources of the town and through its aid practically every other enterprise which has located here has been induced to come.

## ACCIDENTS, DAMAGES AND LOSSES

The grand jury has returned true bills against Dr. R. C. Flowers, the brick promoter, at Reading, Pa., on charges of false pretenses.

Referee Bertolet, Reading, Pa., has granted an order to sell the brick, houses and all personal property of the Montello Brick works.

Thos. Forsted, an employee of the Kalo (Ia.) Brick & Tile Co., overloaded with bug-juice, fell from the top of stairs and was found dead.

Judge Boyd has signed an order adjudicating the Piedmont Brick Company of Charlotte, N. C., a bankrupt, upon the report of the referee.

Frederick Mertens, and G. R. Sappington, have been appointed receivers of the Highland Brick Co., near Hyattsville, Md. It is claimed that the company has assets of \$40,000 and is insolvent.

Albert Bollschweiler has made application to place the Perth Amboy (N. J.) Ceramic Company in the hands of the receiver. The application was made in behalf of the stockholders and the creditors.

The Appellate Court has set aside the judgment of \$2,200 given to Celia Reilly against the Troy (N. Y.) Brick Company, for the death of her husband who was buried under clay in 1904 at the works of the company.

The estate of Ernest C. Rogers has been awarded \$450 damages on a suit of \$10,000 against the White Hall (Ills.) Sewer Pipe and Stoneware Co. Mr. Rogers was killed while on a car at the works of the company.

A burglar armed with a hand axe forced open a door and at the point of a gun forced the watchman of the Sheridan Brick Co. works at Brazil, Ind., to witness his work. The American Sewer Pipe Co.'s plant was also visited.

As a result of an accident at the Valley Camp Brick Works, near Tarantum, Pa., two men were killed and one injured, by the falling of the kiln walls. The men were supposed tramps and had taken refuge from the rain in the kiln.

The Blue Ridge Enameled Brick Co., Prudential Bldg., Philadelphia, Pa., was buncoed out of \$25,000 worth of notes by one J. E. Davis, who took them 10 discount on the per cent basis. Authorities think that James M. Whelpley, who is under arrest in New York, is the same person.

### JUDGMENT IS REVERSED BY APPELATE COURT

The Appellate Division has reversed a judgment of \$2,200 rendered upon a verdict in the case of Celia Reilly against the Troy (N. Y.) Brick Company, and ordered a new trial. Mrs. Reilly sued to recover damages for the death of her husband, David, who was killed on June 3, 1904, by being buried under a mass of clay that came down from defendant's clay bank at Oil Mill hill. There had been several other slides of clay. The bank was sixty feet high.

The action has been four times tried. On the first trial Mrs. Reilly recovered a verdict for \$1,000; on the second trial a non-suit was rendered, which was affirmed by the Appellate Division and reversed by the Court of Appeals. On the third trial the jury rendered a verdict in favor of Mrs. Reilly for \$1,000. This verdict was set aside by the trial judge. The fourth trial resulted in a verdict for \$2,200, which the Appellate Division now sets aside.

### DICKINSON COMPANY FINDS ITS TESTS SATISFACTORY AND WILL ENLARGE PLANT

After two years of experimenting and investigation, W. W. Dickinson, president of the Arkansas Brick and Manufacturing Company, Little Rock, stated that his company would embark in the manufacture of vitrified paving brick, producing, when the plant is in full operation, 100,000 brick a day, giving employment to 100 men and materially reducing the cost of paving in Little Rock.

The shale lies in inexhaustible quantities in close proximity to the present plant of the company on the Nineteenth street pike. Tests have been made and the quality of the brick is said to compete with all other vitrified brick on the market.

A kiln was erected some time ago, and the brick burned were examined by E. A. Kingsley, superintendent of public works, who said that they compared with any other brick he had ever seen.

At present Pittsburg, Kan., is the nearest point where vitrified brick for paving purposes can be obtained, and the city is buying its brick from that point, more than 300 miles away. There is a plant, recently erected at Fort Smith, where all of the present output is used for paving that city.

With the exception of Fort Smith, Little Rock will be the most available point for municipalities and contractors to purchase paving brick. The territory in which Little Rock would penetrate includes Texas, Louisiana, Mississippi and part of Tennessee.

President Dickinson stated that the manufacture of vitrified brick would materially reduce the cost of paving in Little Rock by saving freight cost and no doubt would give an impetus to the municipal improvement of streets.

Some machinery has been installed and the plant is already turning out some brick. When all of the machinery is received and installed and the kilns completed, the cost of the improvements will aggregate \$100,000.

The Arkansas Brick and Manufacturing Company is now employing 150 men, and when the new plant is in full operation it will furnish work for 100 additional men. The cost of the present building brick plant is between \$150,000 and \$200,000. The new improvements will increase the value of the plant to far more than a quarter of a million dollars.

No stock is for sale; the paving plant is to be operated by the present company.

President Dickinson will soon leave on a general tour of many of the vitrified paving brick plants of the country, and will be absent for a week or so.

The shale pits of the company are west and south of the Dickinson lumber mills, recently destroyed by fire.

### CHARGES FOR TOWING TO BE BY THE THOUSAND

The Cornell Steamboat Company has notified Hudson River brick makers that hereafter the rate for towing brick barges will be by the thousand of brick carried, so that payment will be according to the actual amount of freight moved. The rate from Kingston to New York will be 20 cents a thousand; from Catskill 22 cents and from Newburgh 16 cents. The rate from other points will be in proportion.

### SCHOOL OF BRICK LAYING SELECTS HEAD OF DEPARTMENT

Ora C. Pierson, a well-known Indianapolis builder, who has erected a number of churches and other large structures in Indianapolis, has been appointed director of the school for bricklayers which the National Brick Manufacturers' Association will open at the Technical Institute. This will be the only school of its kind in the middle West and one of a very few in the United States. The committee which represents the national association in the management of the school is composed of Anthony Ittner, St. Louis; J. M. Blair, Cincinnati; George T. Dickover, Wilkes-Barre, Pa.; M. E. Gregory, Corning, N. Y., and T. A. Randall, Indianapolis.

The institution will include materials which make up brick manufacturing, the cost of materials and labor and the drawing of plans in making estimates on construction work. The shop practice will be in laying common, pressed and ornamental brick in walls, chimneys, mantels, arches, cornices and the like. The school year is to be nine months in length, with two terms to the year.

At its recent convention the National Brick Manufacturers' Association voted to establish the school, and members of the organization subscribed for sixty scholarships at \$60 each, these scholarships to be lent to boys who desire to learn the trade of brick-laying, and the loans will be used to pay their tuition. An effort is making to increase the number of scholarships to 100. Boys of sixteen years or older who have completed the eighth grade of the common schools will be admitted to the new department.

### WONDERFUL KAOLIN DEPOSITS LOCATED IN TEXAS

San Antonio, Texas, March 21.—Wonderful kaolin deposits in Edward county, about 70 miles from this city have lately been acquired by a Chicago syndicate in which San Antonio capitalists are interested, and will supply the pottery works not only in this country but in Europe. This kaolin has been analyzed by the Havilands of France and pronounced as fine as any kaolin in the world. It has not been worked before on account of some flaw in the title to the land, but this has now been straightened out, and a big development will take place. The quality of this kaolin allows the finest and most delicate china to be made from it. Ultimately it is hoped to establish a pottery works near this city and to manufacture a Texas china that will be unequalled.

### PRICES OF SEWER PIPE TO COME DOWN

At a meeting of sewer pipe interests held in New York last week it is stated that the gentlemen's agreement as to maintaining the selling prices of sewer pipe throughout the country, it is said there was a lack of unanimity of mind on that subject, and the selling price arrangement as a consequence will probably go to sticks.

This effects all the industries more or less, and means that the different manufacturers will go after trade with more energy, and those who put the ginger into it will get the greater part of the business.

Since the organization of the pipe trust these selling compacts have been steadily maintained, but now it is likely that it will be a merry hustle for trade, and "the devil take the hindmost in the race."

### MYSTERIOUS MOVES MADE BY BRICK MANUFACTURERS

From the stories that are being circulated in brickmaking circles in Hamilton, Ont., it looks as if there was a new brick combination being formed, and it is also said that the police department has been put wise to what is going on, and that Crown Attorney Washington may do a new stunt in combine prosecuting some of these days. Mr. Washington denies any knowledge of any new brick deal, but it is said on good authority that one of the detectives has been brooding over the affair for some days.

A meeting was held March 17th of the brick manufacturers of Hamilton, excepting George F. Webb, G. E. Mills, and possibly E. New. Sackville Hill was appointed the manager, or selling agent of the new company, which is said to be in process of formation, and which will control practically all the output of the Hamilton brick yards. The Simpson Brick Company, which owns the Aberdeen Brick Company—both Toronto concerns—has not sold out to the new company.

It is the output to date of the Simpson brick yards that has been sold to the new company, or the alleged combine. This amounts to nearly two million brick, and the Toronto companies will manufacture six or seven million brick this season yet.

There was a prospect that the prices of brick would tumble when the matter was looked up a couple of weeks ago. The price was then \$6.50, but the brick men got together, and made it \$7.50, which is the price now. The price said to have been agreed on by the new combination is \$8.50, or the same price as last season, when the enormous amount of building nearly created a brick famine.

Brick gossips say that it will be impossible to buy brick less than \$8.50 this year, unless it is from the one or two outsiders. George E. Mills is no longer selling agent of the combination because of the entrance of the Toronto companies into the deal. The manager of the Simpson brickyards says that he has been instructed that all output to date has been sold, and will be taken over by the new owners on inventory.

Whether or not there is material in the case for police interference on the ground of a combine in the restraint of trade—a combine for the fixing of the price of brick—is yet hard to say. There have been many prosecutions on such grounds, but Crown Attorney Washington says that the brick combine story fizzled out some years ago. This new one may merit his attention.

### WILL PAVE COUNTRY ROADS WITH BRICK

The county commissioners recently forwarded to the State Highway department at Harrisburg, petitions for the paving of the Oak Forest road, Waynesburg, Pa., in Center township, for a distance of three miles, and the Mt. Morris road in Franklin township for the same distance. Some time ago the commissioners petitioned the State Highway department to macadamize these two pieces of road and since that time the officials have decided that paving the roads with brick would be better and cheaper, as the costs of repairs on the improved roads already constructed in the county has been very great.

### TRUSTEE MAY SELL MONTELLO CO.'S PROPERTY

There was a meeting of creditors of the Montello Brick Works, Reading, Pa., before Referee S. E. Bertolet, when the referee announced his decision in the matter of the application of the trustee, Ed. D. Trexler, to sell all the personal property of the bankrupt company.

In the opinion filed by the referee, the Montello Brick Company is given all the machinery, real estate, the extension and improvement of all the property necessary for the completion of the four plants. The company also had the right to forfeit the leases under certain clauses, that all the foregoing property would revert to the Montello Brick Company, which could enforce the lease.

The personal property located at several of the plants, as well as the 49 horses, which are being boarded, and the furniture in Reading and Philadelphia, does not go to the lessor, but may be sold by the trustee. This includes \$1,300,000 worth of manufactured fire brick; also 1,300,000 salmon brick and 40 horses.

The trustee was authorized to prepare the necessary order of sale, which he did at once, and is now empowered to sell at private sale at the best price obtainable, but not less than 75 per cent of the appraised value.

### HUDSON RIVER BRICK MAKERS MEET AT NEWBURGH

A meeting of the Hudson River Brick Manufacturers' Association was held March 20, at The Palatine, in Newburgh, N. Y. It is said that the meeting was held just to talk over the situation and not for the transaction of any particular business.

The prices of brick are very low at present and it was thought that by a comparison of notes the manufacturers might see some way out of the difficulty of low prices for their product the coming season.

There were over a hundred members of the association present, in fact about all of the members are said to have been there. The president, W. K. Hammond, of Fishkill, presided, and the record was kept by the secretary, Robert T. Boyd of Roseton and New York. Brick manufacturers were present from Newburgh, Fishkill, Haverstraw, New Windsor, Roseton, Danskammer Point, Denning's Point, Rondout, Catskill, Esopus, East Kingston and several other points along the Hudson.

### TO START UP IN HOCKING VALLEY

The Columbus (Ohio) and Hocking Coal and Iron company is preparing to start up its new brick plant in the Hocking valley, which was completed last fall. The gas producers which have been installed failed to do satisfactory work at first and there have been a number of changes made in them by the manufacturers. Tests made this week show that the defects have been remedied, and the big plant will soon be placed in operation. A special meeting of the stockholders of the company will be held in the offices of the corporation in the Harrison building, April 16, for the purpose of authorizing certain actions in connection with the brick plants by the board of directors.



**SEND BRICK TO RANGOON AS BALLAST**

The four masted British built German clipper ship Peter Rickmers, in New York, March 22, from Bremen, has aboard 60,000 German white brick, slipped at Bremerhaven, which she is going to carry with her to Rangoon, whither she will also take from this port a cargo of case oil. Capt. Bachman said his employers had found that the Rickmers, which is slim and heavily sparred, needed a lot of ballast to cross the sea. There was no reason why she should not have profitable ballast and so they put aboard the bricks, which are sold at a big profit in India, and 200 tons of stone fit for Burmese foundations. Incidentally, such is the cargo capacity of the big ship, she took aboard 1,350 tons of sand ballast. She will dump that at South Brooklyn before going to Bayonne to load with case oil, and the sand also will be sold. A cargo of case oil alone would not be heavy enough to keep the Rickmers from ducking under the pressure of a stiff breeze, and that is why she has to take the bricks and stone the roundabout way from Germany.

Capt. Bachman has a fine crew and he is proud of them, but he is going to find out if he can who or what it was that broached his private provision compartment and took out 150 bottles of fine German beer. He will ask the German consul here to call a court of inquiry. The crew, made up of thirty young persons, mostly Germans, decline to express an opinion on the subject.

**MR. ILLER MUST MOVE PART OF PLANT**

By a decree issued by Judge Kennedy, Peter Iller will have to move a part of his \$170,000 brick plant at Second and Pine streets, Omaha, Neb., from the public highway within six months. Iller purchased a portion of the street from the city but on objections from Rasmus Peterson, who owns the Gate City Malt plant across the street, Judge Kennedy held the sale could not deprive Peterson of his easement in the street and Iller would have to restore the street as it was within six months. An injunction to that effect was issued, but Mr. Iller will continue to fight the case and gave notice of an appeal to the supreme court.

Peterson's objections to the presence of the brick plant in the street, was that it prevented free access to the malt plant, though the latter is not in operation now. Besides a large number of kilns which are in the street the order also affects the gas producing plant which supplies the brick factory.

**CRUSHED BRICK FOR ROADS**

Supervisor Miller, of Posey township, Indiana, says that the charge that gravel beats crushed brick on the road is incorrect. He claims that the portion of the national road on which crushed brick was placed is in fine condition, while the portion of the road on which there was only gravel has cut through and become almost impassable.

Mr. Miller is a strong advocate of the crushed brick and he claims that this can be secured at a much less cost than crushed stone and it has superior wearing qualities and in every way makes a better road.

**COUNCIL CANDIDATES TO QUIT FIELD**

The passage of the bill in Virginia prohibiting members of city councils and municipal boards from sharing in any way, directly or indirectly, in the profits of a city contract, will have an important bearing upon the campaign now in progress.

It is understood that several members of each branch of the council in Richmond will retire rather than surrender their right to supply materials and work to contractors doing work for the city.

Alderman John Mann, Jr., of Marshall ward, who is a brick manufacturer, has been supplying city contractors for years with the product of his brick yards. He manufactures a grade of brick that is peculiarly suited to climatic and topographical conditions, and the orders he fills for contractors doing work for the city consequently reach a large total each year. It is understood that Mr. Mann will not stand for re-election to the board at so great a sacrifice to his business interests.

**TEXAS BRICK PLANT RESUMES**

Beaumont, Tex., March 18.—The Beaumont Brick Company, belonging to the Gulf States Brick Company, resumed operations during the past week after being closed down since last October because of the money stringency and the lack of demand for the product. This company operates the large plant at Loeb on the Santa Fe, as well as the Beaumont plant, and when the financial depression struck the country the Beaumont plant was shut down entirely and the Loeb plant operated on a limited scale. The outlook is sufficiently encouraging to induce the company to resume operations, with the expectation of disposing of the product without difficulty.

**NEW INDUSTRY FOR OSKALOOSA**

The soliciting committee of the Oskaloosa (Iowa) Commercial club announced its success in placing \$30,000 in bonds necessary to secure the location of a plant of the American Supply company to manufacture enameled brick. The company will immediately begin the establishment of the plant. It agrees to employ 100 men in three months, and 400 in a year. The plant is one of the biggest things in an industrial line in the state.

Edward A. Swift, of Ottawa, Ills., will show you in his pamphlet No. 2 how to dry your ware with exhaust steam, and burn with slack coal. This is a fine method for small capacity plants.

The Vulcan Iron Works, Mason City, Ia., who manufacture a light-running dryer car, having a dust proof roller bearing are doing a splendid business. Cuts of their cars are on page 39 of this issue.

Steel Brick Pallets are the thing nowadays, for those that are built right at the right price you will have to write to the Ohio Galvanizing & Mfg. Co., at Niles, Ohio. You can see style No. 4 on page 47 of this issue.

Are you aware that H. Haigh, Catskill, N. Y., builds continuous kilns arranged to suit any location. He is making quite a success in many parts of the county. See what he has to say at the top of page 43 of this issue.

## WOMEN CHANGE PLACES WITH MEN

London, March 17.—The greatest plague spot of civilization, the potteries district in Staffordshire, where 90,000 men and women live lives of unspeakable brutality, is to be investigated by the British government.

In an official report civilization is declared to be non-existent there. The chief towns in the area are Fenton, Tunstall, Stoke, and Langton. The inhabitants manufacture bricks, earthenware, and china goods.

There are streets where policemen are afraid to go alone, and into one spot in Langton, called "The Devil's Nook," the officers of the law never venture.

The houses are scarcely fit for human habitation; infant mortality amounts to one-third of the births; and drink and immorality are rampant. Even the local governing authorities take no interest in putting matters right, because most members of the town councils own the resorts of vice.

The women of the potteries have changed places with the men. The women go to work at 6 a. m., returning at night, while the men stay at home.

In the brick fields, where most of the women work, they soon become dewomanized. They wear heavy boots, coarse sackings, and perform tasks which would tax the strength of men. A woman brick-maker can turn out 1,000 brick per day, for which she gets 75 cents. Wheeling heavy barrows, carrying loads of bricks in their aprons, working in the hot oven rooms under life-destroying conditions, seeing no life but their sordid homes, these women have come down to a condition of animalism unsurpassed anywhere else in the world.

Drink clubs are formed in each pottery works. The women—including young girls—contribute 1 or 2 cents from their wages to a fund to be spent on Saturday night in a general spree lasting over the week end.

There is no home life whatever. The children grow up any way. At one home visited by a government official not long ago a baby was found pinned up in newspapers because the father, during the mother's absence, had pawned the infant's clothes in order to purchase beer.

In the Fenton district recently the local clergyman offered a prize to couples who would marry in accordance with church rites. He said that for two years there had only been one properly performed marriage in the district. The usual custom is for a man to pick out some hard-working woman and simply start housekeeping. He agrees to mind the children while she supports the home.

The women regard their inverted social order as satisfactory. The life in the factory and brick field is more free, with the kind of freedom that constitutes license instead of liberty. The home is a mere accident.

School students who go into the brick fields to study the problems there often come back with black eyes and tattered clothes. In the potteries there are no theaters, public baths, libraries, or other places of amusement.

Ministers say that it is a matter of indifference to the potters in which direction they go when they die—up or down. If the latter, it can not be much of a change from the conditions in which they pass their lives while on earth.

## SAND OR LIME BRICK OR BLOCK NEWS

The Blue Ridge Granite Brick Co., Asheville, N. C., has been incorporated with \$25,000 capital stock. T. C. Cox and others are the stockholders.

D. W. Radical of Lake Crystal, Minn., has purchased land in Mankato, Minn., and will remove the drain tile plant from Garden City, where it is now located.

The plant of the New Castle (Pa.) Sand Lime Brick Company, near the Harbor, was sold at public sale to different parties, at very low prices, in some cases only 10 per cent of its cost.

Frank M. Sears has severed his connection with the Schenectady (N. Y.) Sand Stone Brick Co., as superintendent, and returned to Saginaw, Mich. Mr. Sears is a good superintendent and well liked.

The Rome (N. Y.) Concrete Stone Co., has been incorporated with \$5,000 capital stock. The directors are Walter C. Harrington, Edwin B. Smith and S. M. Stevens. They will make blocks and brick.

The Seminole Press Brick Company, Jacksonville, Fla., have installed a new press, which gives them a very much larger outfit. The office at the foot of Hogan street is managed by J. K. Munnerlyn.

The Pensauken Art & Stone Brick Co., has been organized at Camden, N. J., with \$350,000 capital stock. Incorporators are Samuel Howitz, T. D. Just, James Doran, W. A. Leopold and John E. Welsh.

The Gary (Ind.) Granite Brick & Stone Company has been incorporated with \$75,000 capital stock. Directors are F. O. Hodson, G. F. Baker, C. A. Peterson, Frank Orth, Burton Clapper and W. C. Kunert.

Dan Beers, receiver for the Ft. Wayne (Ind.) Pressed Brick Co., whose plant was very badly damaged by fire recently, announces that the plant will be rebuilt and resume operations within the next thirty days.

The Standard Concrete and Construction Company, Springfield, Mass., has been incorporated with \$25,000 capital stock to manufacture brick, etc. Herman Ude is president, Edward M. Kincher, treasurer, and Gordon W. Gordon, secretary.

Readers interested in machinery to make sand lime brick should read the advertisements on pages 3, 4, 5, 6, 7, 9, 10, 11, 17, 37, 39, 40, 41, 42, 43, 44, 46, 47 and the back of the cover. They all sell something of value to sand lime brick manufacturers.

The School Board of San Antonio, Texas, has adopted a sand lime brick of local make to be used for school work hereafter. City School Architect August Herff and two associate architects recommended the change; 500,000 brick are used annually for this purpose.

At a meeting of the directors of the Sugar Grove Brick Company, in the Harrison Bldg., Columbus, Ohio, it was decided to start the plant at once at its fullest capacity. Fifty thousand brick daily will be made. They have just added a second press, which doubles the capacity. The officers are E. W. Swisher, president; S. M. Ferguson, vice-president; C. W. Herb, treasurer, and Gus Marquart, secretary.

## MISCELLANEOUS ITEMS

James Neet will start his tile works at Gifford, Mo., within a few days.

The Magnolia Brick works at New Martinsville, W. Va., will shortly resume operations.

B. A. Stanforth of Gainesville, Tex., is organizing a company to erect a brick works at Wichita Falls, Texas.

The Hamilton (Mont.) Brick Co., has been organized by J. O. Lagerquist, F. H. Drinkenberg and Geo. E. Sullinger.

C. W. Graft, manager of the Northern Pressed Brick Co., Crookston, Minn., states that business is good in that section of the country.

The C. M. Miller Mfg. Co., Terra Haute, Ind., have filed an application in the Circuit Court to change its firm name to the Wabash Brick Company.

The Humboldt (Kansas) Brick Mfg. Co., has commenced active operations for the spring and summer, after making the improvements at the plant.

The machinery is being installed at the Empire Brick Co.'s plant at New Albany, Kansas. A. C. Michaels of Joplin, Mo., is president of the company.

The Blue Ridge Brick Co., Asheville, N. C., has been incorporated with \$10,000 capital stock by Trench C. Cox, Louis H. Iworne and Vanburan Boswick.

D. C. Morton of Kansas City, and J. H. Chapman of Goshen, Ind. have leased a tract of land east of Quinlan, Okla., and will put up an up-to-date brick yard.

The Colonial Pressed Brick Co., Mogadore, Ohio, has increased its capital stock from \$50,000 to \$100,000, and will proceed to enlarge the capacity of the plant.

The Auburn (Pa.) Brick works will not suffer for the lack of business this year as they already have orders ahead to keep the plant running full force the whole summer.

The Oskaloosa (Ia.) Commercial Club has announced its success in placing \$30,000 bonds necessary to secure the location of a plant of the American Supply Co., to manufacture enameled brick.

The Castanea (Pa.) Brick & Tile Co. have opened up a new bed of clay near the Castanea Brewery, quite a distance north of the fire-bed opened up. The second body is of red shale and superior in quality to the first.

The Oskaloosa (Ia.) Paving Brick Co., is ready to begin work for the season, but is forced to remain idle until after the mine workers settle as to whether it will mine coal. They will begin work as soon as this is settled.

The Beebe (Ark.) Brick Mfg. Co., has been incorporated by eighteen or twenty of the business men of that town and the plant in the town purchased and will be operated. N. H. Strickland, cashier of the Bank of Beebe, is an officer.

The Sexton (Pa.) Vitrified Brick Co., have closed a contract with a company at Reading to furnish a million or more of paving brick this year. The contract really is the output for the year even if it should be five or ten millions.

A. Mitz, Thomas Todd and S. R. Wriglesworth, are the chief owners of a company which is forming at Fernie, B. C., with \$50,000 capital stock to build a brick-making plant on the west side of the Elk river adjoining the Great Northern tracks.

The Hahne-Brunkhorst Co., Chicago, has changed its name to the Chicago Terra Cotta Company.

The Toronto (Ont.) Indestructible Brick Co., Ltd., has been incorporated with a capital of \$100,000.

Chas. and George Beach will erect a tile factory southeast of Chardon, Ohio, near the B. & O. Ry. bridge.

The Standard Brick Manufacturing Co., Evansville, Ind., has increased its capital stock from \$40,000 to \$50,000 and will make corresponding improvements.

The plant of the Coffeyville (Kansas) Shale Brick Co., has been reopened. J. E. Exner, the manager, reports the prospects for business to be very good.

William Sullivan, of Austin, Minn., has the contract for building the many kilns for the Mason City (Ia.) Clay Products Co., which is rapidly being completed.

The Scioto Fire Brick Co., Sciotoville, Ohio, has started their plant in operation after a shut-down made to avoid dangers of losses to green brick by the flood.

D. W. Radical, of Lake Crystal, Minn., has purchased land of M. G. Willard at Mankato and will move his tile plant from Garden City, where it is now located.

The Puritan Brick Co., Hamden, O., has been incorporated with \$10,000 capital stock by William L. Holmes, H. P. Harding, E. M. Thompson and J. A. Leonard.

The Illinois Brick Co., Chicago, has purchased 85 acres of land near Evanston from John Muns, consideration \$16,808. They have also passed the regular quarterly dividend again.

The Bippus (Ind.) Tile Co., is rebuilding their plant, which recently was destroyed by fire and will have the building up in a short time. J. W. McCollum is one of the principal stockholders.

The Richardson (N. Dak.) Clay Products Co., has been incorporated with \$25,000 capital stock. Incorporators are L. B. Bussen, A. Zinn Bowser, C. S. Bowser, and A. F. Bursen, all of Richardson.

The National Pressed Brick Co., Mascoutah, Ills., has purchased the entire stock of brick on hand at the Newbern Brick Works, consisting of 1,500,000 and same is being loaded for shipment to St. Louis, Mo.

Have you read that "excellent opportunity" to buy or lease a brick and tile plant in Virginia, where there is a fine market for either brick or tile at exceptionally good prices. If not, it is on page 39 of this issue.

The Burlington (Ia.) Brick & Tile Co., besides running the plant at Burlington, will build and operate a plant near Viola, Ill. Machinery has been purchased and work started by the manager, Arthur Gillett. They will make a face brick.

The Castleton Brick & Tile Co., New York, has been incorporated with \$50,000 capital stock. Directors are Isaac H. Love and George Lodge, 132 Nassau street, and L. H. Leber, 29 W. 64th street, New York. The works will be at Castleton.

Archie Hilliard is now the sole proprietor of the Spencer (Iowa) Brick & Tile Works, having bought out the interest of his partner, Mr. Johnston. He will make a number of improvements at the plant and run a switch track to the works from the railroad.

L. A. Jack Lumber Co., Scooba, Miss., contemplates installing equipment to make 20,000 brick daily.

J. S. Mason, Altus, Okla., is promoting the establishing of a brick plant. The company has been organized.

Johnson Bros., brick manufacturers at Granger, Wash., have succeeded in getting a switch track into their works.

Directors of the American Sewer Pipe Co., have deferred action in the matter of dividends on the stock until the last of April.

Isaac L. Lucas, Dover, N. H., has cut 1,000 cords of wood and had it hauled to his brick yard ready to burn brick in the spring.

The John H. Black Co., Buffalo, N. Y., has been incorporated with \$10,000 capital stock. Directors are E. C. Drewelow, L. Black and W. J. Degenhart.

W. H. Barnes, with other parties, are figuring on the establishing of a brick plant at Tekoa, Wash., where the necessary clay has been found of good quality.

The Cuyeland Brick Works at Pratt City, Ala., has been leased to Ex-Superintendent Ewing, of Birmingham, and will be put into commission within a few days.

W. W. Dickinson, president of the Arkansas Brick Mfg. Co., Little Rock, Ark., is examining several brick works with a view of establishing a brick manufactory.

The Blackwell (Okla.) Brick & Tile Co., are building four permanent kilns, one to be square with a 250,000 capacity and three round with 100,000 capacity each.

The Shiloh (N. C.) Brick & Lumber Co., has been incorporated with \$40,000 capital stock by W. D. Southworth, J. L. Southworth, J. N. Rutledge and S. S. Stover.

Munsot Bros., proprietors of the Capron (Ill.) Brick & Tile Works, has bought 47 acres of land containing fine clay, so they can increase the capacity of their plant.

The Latrobe (Pa.) Brick Co., have received an order for 4,000,000 brick which will keep the plant in operation until nearly fall. The plant employs 50 hands and has been put into operation.

John W. Stipes is preparing to start his Urbana, Ill., brick yards the first of April. Mr. Stipes says that business in Champaign and Urbana will be the greatest in the history unless all signs fail.

The West Virginia Brick, Tile & Terra Cotta Co., Falling Waters, W. Va., have its plans nearly ready. Charles Thyme of 4511 18th street, Nicetown, Philadelphia, Pa., will give information.

The Harbison-Walker Fire Brick Works at Mount Union, Pa., has started up again under the management of C. V. Hackman, its former manager. It is said to be the largest fire brick plant in the world, making 200,000 fire brick daily.

The Toronto (Ont.) Fire Brick Co., is installing at its plant at Minnico, new boilers and additional brick machinery. They will also manufacture drain tile of various sizes. The company have made application for electric power. J. W. Ball is the manager.

The Milldale (Ct.) Brick Co., has been incorporated with \$50,000 capital stock to make brick in the Clark plant, later owned by J. P. Fontana, deceased. The office is in Southington, at the office of the Clark Bros. Bolt Co. The officers are Charles H. Clark, president; Frank Noble, vice-president; Edwin S. Towle, secretary and treasurer.

The North Alabama Brick Co., Decatur, Ala., resumed operations the 18th, after a shut-down of several months.

11. L. Swift & Son, Riverside, Ia., are arranging to start up their tile works April 13th with a strong force of workmen.

The Billings (Mont.) Pressed Brick & Tile Co., are making arrangements to open up their plant. Mr. Bonnette is the manager.

The Gill Clay Pot Co., Muncie, Ind., has been incorporated with \$30,000 capital stock. The directors are C. J. Gill, H. R. Gill and O. Grafton.

The Mead & King Brick Co., Portsmouth, Ohio, has been incorporated with \$16,000 capital stock by T. F. Mead, C. E. King, S. J. King, H. E. Mead and D. B. Mead.

The Concord Brick Co., Natchez, Miss., will erect fire-proof buildings on the site of the other one recently burned, and the plant will be equipped with modern machinery.

The Sioux City (Ia.) Brick & Tile Works have opened its plant at North Riverside and has a large force at work. Since the completion of the new kiln the plant has been increased two-fold.

The American Supply Co., Oskaloosa, Iowa., will start on their plant as soon as the first installment is paid on the bonds. The building is to be 300x700 feet and 40 kilns will require 3,000,000 fire brick. 75,000 brick will be made daily.

C. H. Chamblin has sold his interest in the Paducah (Ky.) Brick & Tile Co., to the Murray heirs, the children of John Murray, deceased. Arthur Murray will be the manager of the \$40,000 corporation. Mr. Chamblin will move to St. Louis.

**DIRECT HEAT**

# **DRYERS**

**FOR**

## **BANK SAND GLASS SAND ROCK, CLAY COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**  
62-64 William St. NEW YORK CITY

# WANTED

Superintendents brick manufacturing plant, estimator fire-proofing, salesmen, brick and sewer pipe, salesman, terra cotta, bookkeeper, private secretary to manager, salaries, \$1,500 to \$1,800. Other positions in same line. Write HAFORDS.

300 Broadway, New York, or  
1010 Hartford Bldg., Chicago.

# FOR SALE

One power press, in number one condition, used only but a short time; capacity 1000 per day. Ask for full particulars.

American Enamelled Brick & Tile Co.  
1 Madison Ave., New York

# FOR SALE CHEAP

Two American Clay Machinery Company No. 23 combined brick machines with repair tools sufficient to make machine first class. Capacity 1500 to 10000 per hour. Greatest bargain. Write for particulars. GREAT PATENT BRICK CLAY CO.  
30 Cottland St., New York.

# FOR SALE

Three two-press Whitteker pressed machines. Each machine is complete with counter shaft and ready to run. Condition good.  
One single press Whitteker machine, all complete and ready to run. These machines are for making pressed brick. Condition good. Special prices.  
6,500 soft pine pallets, each 30 inches long 9 inches wide. Thick 1 1/2 inches. Four picks of these pallets for six cents apiece F. O. B. cars.  
We also have several engines and boilers, heaters, pumps and connections.  
THE COLUMBIAN CEMENT CO.  
304-306 Brunswick Bldg., Columbus, Ohio

FOR SALE: CHEAP—New and re-laying rails, 12 lb. 16 and 20 pound. For price, address: ATLANTIC CAR & MFG. CO.,  
Cleveland, Ohio

# WANTED

We want to buy a complete building of some kind which we can utilize for drying sheds for drain tile. Give us full description of building, what it has been used for and best price as well as location in first letter. We mean business and want definite reply.

The Consolidated Tile and Brick Mfg. Co.  
Kalamazoo, Mich.

# BRICK PLANT FOR SALE

Containing about 10 acres of best clay without top soil, perfect drainage situated midway between Baltimore & Washington with necessary railway facilities. Plant was partly destroyed by fire. Two mud machines, engines, new steam plant, 16 tunnel, hot air dryer with 200 steel case, trackage and kilns remaining intact. Large house containing 8 room for superintendent. Purchaser could make this a modern fully equipped two machine plant for a little money.

Address G. G. A.  
Clay Record, 301 Dearborn St.,  
Chicago, Illinois

# WANTED

A practical brick burner, state wages, experience to the  
Eason Brick Co., Ltd.  
Vermilion, Alta., Can.

# WANTED

Position as superintendent or foreman of soft or stiff mud brick factory. Must understand the business in up or down draft kilns, also the handling of mud and all classes of machinery. Best references.  
Address, C. M., care Clay Record,  
Chicago, Ill.

# FOR SALE

One Two Mud Machine Dry Press Brick Machine.  
One 6 ft. Iron Frame Dry Plan  
One No. 6 Brewer Combination Brick & Tile Machine with all necessary dies and casters.  
One Clay Disintegrator,  
One Clay Elevator,  
One Tile Elevator.  
O. W. DUNLAP  
Bloomington, Ill.

# POSITION WANTED

I have had twenty-two years' experience in fire clays, brick, hollow brick, building tile, gas retorts and settings. Understands making magnesia and silica brick. Want position as superintendent.  
W. T. J., care Clay Record,  
Chicago, Ill.

# POSITION WANTED

Young man desires a position as Superintendent of sales manager, understanding soft mud and dry press process. Has traveled extensively.  
TRAVELER, care Clay Record,  
Chicago, Ill.

# WANTED

To buy or lease brick plant. One making mottled or stony fire brick, or fire brick preferred, or would buy interest in and take management of company in address.  
C. A. M., care Clay Record,  
Chicago, Ill.

# FOR SALE.



Right and left-hand One, Two and Three Way switches, of various gauges, radius and weight rail, at special prices.  
THE ATLAS CAR & MFG. CO.,  
Chenland, Ohio.

# FOR SALE

Drain Tile and Brick Plant, including sheds and 100 acres of land underlain with limestone. Or will sell machinery consisting of one 40 horse power boiler, one 10 horse power engine one 12 inch Machine with dies to 12 inch, one Raymon Disintegrator one Bessing Automatic Tile Table, one self-cut Brick Table and one elevator.  
Curtis, Trucks Wheelbarrows, etc. Address:  
Malheur & Long  
Xenia, Ohio

# FOR SALE CHEAP

An R. M. Press Combination Brick and Tile Machine No. 20000 at new guaranteed. All dies from 7/16 to 1 1/2 inch included. Also Brick and hollow brick dies.  
Address: REDFIELD BRICK AND TILE WORKS,  
Redfield, Iowa.

# BRICK AND TILE PLANT FOR SALE

At Carthage, Ill., Hercules soft mud brick machine, 5 ft. Menden & Co. machine for making tile, 8 inch square, and all machinery, sheds and kilns in good repair; 35 H.P. engine and 50-H.P. boiler, new. Address,  
W. E. LYON & Co.,  
Carthage, Ill.

# POSITION WANTED

Position by experienced and practical brickmaker as superintendent of a soft mud or dry-press brick plant. Experience in buying brick and care of kilns and machinery. Address:  
W. R. care Clay Record,  
Chicago, Illinois

# FOR SALE

One Wells Brick Machine. One No. 3 Disintegrator. For Horton Co. make. One Semi-automatic side cut cutting table. Wallace Co. make. One 40 horse power Gasoline Engine. Seventy-five Barrels. Much. All in good condition.  
W. H. Vanier Hayden  
Ionia, Mich.

# WANTED

A pug or tempering mill of medium capacity. In good condition. Give full description and lowest cash price in first letter.  
E. C. PORTER  
Lewistown, Pa.

# FOR SALE

One Hercules brick machine, Horton Mfg. Co. make, capacity 40,000 per day; also mould tender for same. 60 ton gas engine machine has only made 2 million brick. Brick sheds, racks and pallets to hold 100,000 brick, 5 good brick trucks. Good reason for selling. Address,  
L. H. care Clay Record,  
Chicago, Ill.

# WANTED

We want to find a market for a large deposit of kaolin. We have other valuable clay for gunpowder, pottery, terra cotta and high class brick.  
Address, Chamber of Commerce,  
Room 1177 Astoria, Oregon.

# WANTED

A position as a Brick burner in a Dry Press or Paving brick plant. Have had much experience and can show good references.  
Address, A. E., 602 1/2 3rd Street,  
Rock Island, Ill.



For better made, of iron 20 and 24 in. 4 Wheel, \$3.00 8 Wheel, \$3.18 Unwarranted. See our list of cars. R. A. HART, 41 WHITE ST., BATTLE CREEK, MICH.

# SUPERINTENDENT WANTED

A superintendent for a soft mud and dry brick plant. One desired that can buy an interest in the company. SUPERINTENDENT.  
Care Clay Record, Chicago, Ill.

# FOR SALE

One-half the stock of a successful incorporated dry-pressed red brick company, carrying with it 11 position in the territory—manager of the company, situated in Illinois city of 60,000, is fully equipped, now running, prosperous, and has established and growing trade in adjacent territory as well as in Chicago. Present holder is in poor health and has other business. \$7,500.00 will buy half the stock, cash or negotiable paper. Excellent chance for good man. Holder of other half of the stock is one of the best-known brick makers in Illinois. Address, U. S., care Clay Record,  
Chicago, Ill.

# FOR SALE

Boiler, 30 inches, 13 feet long by 66 inches horizontal.  
2 Steam Gear Tempering Wheels, complete.  
1 Ports Disintegrator, 3 inch mill.  
1 American Clay Manufacturing Co. Brick Side Cutter, 12 inches.  
1 Correll single Die Steam Press, 15 M. daily.  
1 J. C. Steele & Sons Brick Machine, Automatic Side M.  
1 American 1/2 Way Mfg. Co. No. 10 Brick Machine, Automatic Rotary 30 M. side Cutter or End Cut. Brick capacity 100 M. brick per day.  
1 Chalmers Automatic End Cutting Machine 30 M.  
1 Chalmers Automatic End Cutting Machine 30 M.  
1 Chalmers Double Dry Press, made by Ohio Ceramic Co.  
1 Martin Drag Belt Conveyor, 35 feet long, 18 inch belt.  
6 Clay Bank Carts.  
12 Best Carts Harrows.  
12 Trucks.  
1 300 horse power slide Valve Engine.  
1 Rider-Jackson Hot Air Pump.  
1 Yard Roller.  
1 Vacuum Pump, 2 inch discharge.  
Address, NEW JERSEY  
CARE OF CLAY RECORD  
Chicago, Illinois

# WANTED

A traveling representative to sell Fire and Face brick. Address:  
Face Brick care Clay Record  
Chicago, Ill.

# FOR SALE

Have 60 acres of fine clay land. Railroad running through it. Adjusts city limits. No brick works within 20 miles. Brick sells at \$15.00 thousand. Would like to sell. Address, in first letter, name of man in starting a brick plant who is looking for location. Address,  
H. Cox,  
Chamberlain, S. Dak.

# SUPERINTENDENT WANTED

For fire brick plant. State qualifications, wages wanted and references. Address,  
M. S., care Clay Record,  
Chicago, Ill.

# FOR SALE

One No. 2 Porta & Co. Clay Disintegrator. Used only six months.  
C. BOLFISBUK SONS  
Aurora, Illinois

# SHALE CLAY FOR SALE

Have bed of red, ochreolate and blue shales exposed full length of 3,000-foot railway cut and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow block, brick, paving block, tile, sewer pipe, on river. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Union Railway Co.  
Des Moines, Iowa.



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## REPORT OF THE TWENTY-SEVENTH ANNUAL MEETING OF THE IOWA BRICK AND TILE ASSOCIATION

### SECOND SESSION

President Brecht called the Convention to order at 10:45 a. m. in the banquet hall at the Savery Hotel, Des Moines, Ia. He announced that Mr. W. S. Gemmer, whose name appears on the program, has written that he has been detained in the East and is unable to present his paper. He has, however, forwarded a copy, and I will ask the Secretary to read it.

Secretary Pratt: It is to be regretted that Mr. Gemmer cannot be here, as there are quite a few of the clay-manufacturers who are considerably interested in this question. The company that Mr. Gemmer represents, is giving considerable attention to this method of handling clays, ores, sand, etc., and they have gone to some little trouble in preparing material to acquaint the members of this Association with their methods. They have sent a number of copies of a pamphlet entitled, "Transportation of Clay by an Aerial Wire Rope Tramway," which have been distributed.

### THE ECONOMIC HANDLING OF CLAYS BY MEANS OF AN AERIAL WIRE ROPE TRAMWAY.

The subject on which I am about to speak covers so great a latitude that to enter into a technical discussion would require an unlimited amount of time. I propose, therefore, to give only a brief description of the leading systems of Aerial Wire Rope Transportation, which I will endeavor to make as free from technicalities as possible, and yet sufficiently clear to enable you to grasp the principles involved with a probable view of applying them to your requirements.

It may be well to state that as far back as the 15th century Aerial tramways were in operation in Europe. From statistics we learn that an engineer by the name of Adams Wybe used an Aerial Wire Rope Tramway in the year of 1644 for the transportation of earth during the construction of the Danzig fortification.

The early scenes of this method of transportation passed into oblivion, however, and it was not brought again into extended use until the 40s of the last century.

The invention of rope rendered possible the subjugation of distances that were inaccessible by any other known method of transportation. Its history dates back for some thousands of years, and is lost in the darkness of pre-historic times.

The proved efficiency and economy of Aerial Wire Rope transportation in countries where the irregularity of the land renders surface haulings impracticable, are leading to its adoption, even in situations equally favorable to other systems, because of its lower initial cost, maintenance and expense of operation. There are practically no difficulties presented by natural formations which cannot be overcome by Aerial Wire Rope tramway; roads, rivers, and ravines are spanned; precipices climbed and mountain tops connected without bridges with comparatively little trouble and cost. Distant points are so to speak, brought together and material automatically deposited at either of the terminal stations predetermined points along the line.

This method is especially adapted for transporting all classes of material such as coal, rock, ore, sand, clay, timber, fruit, light merchandise, etc., over practically any length of line. This feature has been demonstrated by tramway systems now in operation varying in length from several hundred feet to twenty or more miles. When a tramway line attains a length of several miles it is customary to divide it into several sections, the number of sections depending on various conditions such as length of line, capacity and irregularities of the ground.

When the gradient in favor of the load is sufficient, a tramway becomes self acting. The descending loaded carriers not only give off sufficient power to haul up the empties but develop a surplus energy, which can be used to advantage in operating light machinery. When power is used to drive a tramway the actual amount required is governed principally by the capacity, friction and the difference in elevation between the loading and discharging terminals.

Tramway systems may be divided into two distinct types. First the double rope system and secondly the single line tramway. The double rope systems may then be subdivided into three varieties of double rope tramways, namely the Friction Grip Type, the Detachable Clip System and the Permanent Attached Clip System.

The single line system is an English invention while the friction grip type originated in Germany. The two clip systems are an American invention and bid fair to gradually replace all other systems.

Before describing these systems it may be well to briefly state what an aerial wire rope tramway consists of for the benefit of those who may not be conversant with this subject.

The distinguishing features of the double rope tramways are the two stationary track cables upon which the loaded and empty carriers travel, respectively, and an endless moving traction rope for propelling these carriers. The track

cables are securely anchored at the leading terminal and supported at intervals along the line by towers located dependent upon the profile of the ground. The tension on both standing and traction cable is maintained by means of weight boxes located at the discharging terminal. The track ropes are carried in grooved saddles mounted on the top caps of the towers, while the traction rope is supported by guide sheaves with self lubricating phosphor bronze bushings, requiring no oiling.

When the friction grip system is employed, it is principally in cases here it is desired to load material from a series of bins, and in cases where it is possible to load from one bin the clip system is far more preferable.

The friction grip system is so called from the fact that each bucket is equipped with a friction grip or clutch which seizes the running traction rope and remains attached thereto by means of friction.

This system might be further subdivided into two classes, one in which the friction is created by an eccentrically operated lever, locked and released automatically, securing a constant friction that is independent of the ascending or descending angle; second, one in which the clutch exerts friction on the traction rope by a lever on which the weight of the bucket is transmitted. This friction varies with the cosine of the angle the line forms with the horizontal.

In general appearance the clip system resembles the friction grip type only that it is more automatic in its mechanism, thereby reducing the amount of attendants and this in turn reducing the cost of transportation to a minimum.

Friction grip tramways ordinarily require from three to ten men or more to handle an output varying from 200 to 500 tons per day, while the same output on a clip system can be handled with one or not more than two men. This is a very important feature considering that the expense for labor is a fixed charge, and for this reason only the clip system is gradually replacing the friction grip system in many instances.

As stated before there are two varieties of clip systems, one in which the bucket is detached automatically for loading, and in the second case the loading is accomplished by means of an automatic loader which does not require the bucket to be detached from the moving traction rope.

The single line tramway system is the simplest in design consisting of one endless traction rope, the same passing around horizontal sheaves at each end of the line and a multiple of buckets, the same being permanently attached to this moving rope; in other words this endless rope in the single line tramways replaces the two ropes in the double rope system. This style of tramway is limited in capacity, the ultimate capacity being approximately 15 to 20 tons per hour. In view of this fact the double rope system is more advantageous on account of being capable of increasing the capacity from time to time as the developments of the mine increase. Quite a few manufacturing concerns have discontinued manufacturing the single line tramway making this system rather obsolete, hence further comment on the same is unnecessary.

The question now arise in your minds as to the cost of a tramway and what would be the minimum cost of transportation. For an example to illustrate this I might refer to one of our patent automatic double rope tramways installed about two years ago for the Hicks Clay Co. at Drake, Illinois.

When the management of this company opened up the clay banks at Drake one of the most serious propositions that confronted them at that time was how to transport the material to the railroad, the clay bank being located 1,500 feet from the railroad tracks. Transportation methods of various kinds were considered including railways, small portable trucks systems and last but not least the aerial tramway system. After carefully considering the details of the various

systems presented, particularly from the cost standpoint (not necessarily the initial cost) the management finally decided on installing the wire rope tramway. This plant has a capacity of about 250 tons per day, and being 1,500 feet in length with about four supporting towers, the complete cost installed ready for operation was approximately \$3,500.00. One man handles the entire output from which you can readily figure that the cost of transportation per ton, assuming that the attendant was paid \$2.00 per day, would amount to less than 1 cent. Now, in addition to this fixed cost of transportation we must add for depreciation in the plant, which we will say will be at the greatest figure not more than 1 to 2 cents, or even assuming that it would run up as high as 4 cents the cost of transportation would be but 5 cents per ton. No other system would compare favorable with this type of transportation, transporting materials at the figures just mentioned.

The type of tramway installed by the Hicks Clay Co. is what is known as the detachable bucket system. In this style of tramway one bucket remains stationary at the loading point while the rest of the line is in operation. As the bucket enters the loading station it is detached automatically from the clip on the traction rope, the clip passing on picks up automatically the stationary loaded bucket at this terminal. In other words this operation is simply detaching one bucket from the clip and attaching another bucket to take its place. This operation is repeated continuously and no attendant is required except the attendant who manipulates the ore age levers controlling the flow of the material from the bin into the buckets. This loaded bucket now travels over the line to the discharging station at which point an automatic trip engages the latch handle of the bucket, releases the bucket automatically permitting the bucket to discharge its contents into the bin. This being a self-dumping, self-righting, and self-locking bucket it performs all these functions without the assistance of additional machinery, and after being discharged the bucket travels on around the terminal to the loading station where the operation of loading is again repeated.

Now, in cases where the length of the tramway is increased over that mentioned above the cost per foot is considerably less. For instance we will assume that we have a tramway proposition on mile in length. The cost of installing a plant of this type, under the same general conditions would be approximately \$10,000.00. This can be accounted for in this manner, that regardless of the length of the tramway, in each case we have a fixed charge, namely the cost of the two terminal stations which is the expensive part of the tramway on account of the automatic machinery used in connection with the same. The cost of transportation is the same whether the system is 1,500 feet or five miles long.

Now the question arises in your minds as to what is the limit of transportation by means of a system of this kind. There is practically no limit as a tramway may be installed and operated as successfully over fifty miles or more as it would over one mile.

In erecting propositions of this kind it is customary to divide the line into sections, each section being approximately four to five miles in length depending upon the contour, and in case of a power proposition each section would be driven independent by the necessary power appliance which may be electric, steam or gas engine. There are tramways throughout this country and foreign countries 25 miles in length, and I am pleased to state operating very successfully.

At this point it may be well to refer back to the second, or permanent attached clip system employing the use of an automatic loader. The general distinguishing features of this system are practically the same as that type described as installed for the Hicks Clay Co. with this exception that

the stationary bucket at the loading station is eliminated and in its place we use a patented two compartment automatic loader. This contrivance consists of two compartments, each compartment holding one-half of the capacity of the bucket. The tramway is continually in operation, and the attendant at the loading station manipulates the ore gates levers permitting the material to flow from the ore bin into the loader and waits for the incoming bucket. This bucket enters the loading station and by means of actuating levers or an accelerator, the automatic loader is placed in commission at a speed that is gradually increased by means of these levers until at a certain point both bucket and loader travel at the same rate of speed. At this instant the automatic mechanism is brought into play, the gates of the loader open and the material automatically flows into the bucket. This is all accomplished while the loader travels through a space of approximately ten feet. At the end of this distance the loader is automatically detached, the bucket passes out over the tramway line and the loader recedes to its normal position, and recharged remaining stationary until the next incoming bucket picks it up, and again passes through the same operation. To one who has never seen a system of this type work it is hardly possible to imagine the advantages obtained, and to use the words of one of our customers watching this loader work, he said, "It is almost human in its operations."

A word might be stated as to the size of buckets on a plant of this kind. Ordinarily we use buckets having a capacity of 7 cubic feet, but in many instances we use buckets as large as 25, 30 and 40 cubic feet in capacity. This all depends upon the kind of material to be transported and the capacity desired.

In conclusion will say that for the benefit of those who may be interested in this method of transportation, you can obtain a very neat souvenir describing fully one of our plants from the Secretary, Mr. C. B. Platt, the same having been prepared for this special occasion.

President Brecht: Gentlemen, you have heard this interesting paper, and it is now open for discussion. I am told that one of our members has installed one of these tramways and has been operating the same for several years. We would like to hear from him as to this experience—Mr. Geo. Schnurr. (Not in meeting.) I also understand that Mr. Paul Beer has seen these tramways in operation, both in the handling of clays and ores and various materials and we would like to have his views.

Mr. Beer: The system about which I would like to talk is one not mentioned in this paper and one which has in fact but recently been invented. As stated in the paper, all tramways now operated are suspended bucket tramways, either of the single or double track variety. It was my privilege to make a trip two weeks ago today to a little town about fifteen miles from Roanoke, Va., where I saw an experimental line in operation called the Lawson Loop System of Aerial Tramway. The line was about 2½ miles long and was used to transport extract wood from one of the mountains in the Blue Ridge range to a siding of the Norfolk & Western Ry. The Blue Ridge mountains as you know are covered with a dense growth of hard wood timber—probably the richest hard wood district in the country at the present time. White oak and chestnut predominate. The chestnut is used largely in making tannic acid, and the company which was operating this line was using the chestnut wood for that purpose.

Before the line was installed they hauled the wood by team to the siding and it cost them, I believe, \$1.10 per cord. The inventor of this system, a Mr. Lawson, who was formerly connected with the United States Patent Department, persuaded the contractor to install this system or permit him to install it, he guaranteeing to convey the timber for less

than half what he was paying, providing the contractor would guarantee that he could load three cars per day. The system is so simple that it is really almost laughable. They have supports every hundred feet—just ordinary rough posts stuck in the ground, with a cross timber, these cross-timbers carrying cast-iron supports for the cable. Instead of having two separate cables with rigid ends for the track, they use one continuous cable for a distance of 600 feet; that is, there is a separate cable every 600 feet, but it is continuous around the sixth support and back to the first. At the sixth support the cable makes an angle of 30 degrees, runs about an 18-inch pulley, which is equivalent to a tension screw and a compression spring for automatically taking up expansion and contraction; and this cable automatically equalizes itself and permits a car to run on the cable just as a car runs on the track—something which has never been accomplished before; because with two separate rigid cables the deflection for difference in length is so great that the car could not maintain an equilibrium. But this loop section enables the cables to automatically equalize themselves, so that the car is maintained in perfect equilibrium.

They have in this system also a traction cable. The car is equipped with an automatic grip which grips and ungrips automatically, just as in this other system; the principle being the loop section. This line was operating cars which were carrying 1,200 pounds each and of course it was not running by any means to capacity. Shortly before my visit they had increased their loading from three cars to ten cars per day, and at that rate it was requiring only 20 H. P. to run the line. They were using steam.

Both the track and the traction cables were 3-8 inch. The cables for the other aerial system which require heavy powers and heavy anchorages, require much larger cables. The expense of the old type aerial tramways with the suspended bucket runs about \$7,500 a mile upward. I believe the system in use at Drake, Ill., which is only 1,500 feet long cost about \$3,500. This loop section system can be built for \$2,500 per mile—from one-third to one-quarter as much as the old type. The cost of renewal is of course much less, because the cables are much smaller. It can be operated just as cheaply as if check power is used. It requires only the man at the power station and of course requires one to load the cars; but that has nothing to do with the system. This power station of 20 H. P. will operate a line eight miles long. They will operate up to ten miles, but if the line is longer than that it is more economical to put in another power station. This power, of course, is very cheap, and it can be operated for almost any distance.

They have also a line in operation at Greenville, Va., which is handling iron ore. I am sorry that I have no illustrations to show this, as I think you would all be interested in it; but if there is any one who would like to have some printed matter, I should be very glad to furnish him with the name of the company which manufactures and builds them.

I may say that the wheels of the car are flanged. The traction cable runs over flanged idlers. It has been difficult up to the present time to operate a flanged wheel, because they did not have switch devices by which the flanged wheel car could be switched to another track; but they have invented a switch which operates very successfully.

A member: Is the load supported or suspended?

Mr. Beer: The car runs on top. These cars run about 300 feet per minute, and it is surprising to see how beautifully they move along on that cable—just like a boat.

Mr. Pixley: I would like to ask how far these cables are apart on the track.

Mr. Beer: I believe they use a 30-inch gauge.

Mr. Platt: How do they pass from one section to the other?



Mr. Beer: They have this traction cable in the center between the two carrying cables, which clinches the car.

Mr. Platt: But where your section of rope track ends and goes around the pulley—every hundred feet you say it does that.

Mr. Beer: They have two supports every 600 feet. These two supports are about six or eight feet apart, and from the two posts they have angle iron or very light T-rail. The ear runs on that T-rail to the next section; it is only about six feet long.

They can make almost any degree of curve and any grade. They made this line just as difficult as they could. They had a 75-degree curve right in the power house, which is about the most difficult proposition they would have to overcome.

Judge Stevens: What is the character of the flange and tread, the same as any ordinary wheel?

Mr. Beer: An ordinary flange wheel, such as a flanged idler.

Judge Stevens: A flange on both sides?

Mr. Beer: Just like a pulley and shift.

Mr. Pixley: Last year we looked up the tramway system and we installed and hauled all of our clay with tramway last year. As this is a kind of an experience meeting, I want to tell you our experience. I believed in tramways and wrote nearly all the tramway companies, but didn't find one that could furnish exactly what we wanted. A clay bank is a little different from handling some other material. It is going down all the time, and I wanted to get some arrangement by which we could load, and as our clay bank went down into the earth, load there. These companies could all start at one place, and they would take the load for miles and dump, but it had to be done on a level. We were loading within a little over a hundred feet from our tracks. Our clay started on top of the ground, and before we were done with it we were down 65 feet. It is impossible every day or two to make a new loading platform. Our proposition was how to go down. I didn't find one company that had an arrangement by which they could hoist a bucket up on the cable and then start it from there and do the work with it. So I did what all clay men have to do; I studied it out myself. We had a bucket that held three thousand pounds. We loaded that and hoisted it onto the tramway and it automatically caught there by friction. We let that down over our cars and it dumped automatically. Then the engineer put on his power, raised the bucket up again, and by raising it fourteen inches there was a catch which allowed the bucket to go down into the mine. Repeat the operation and that was all there was to it. I installed this myself. I bought two buckets second hand; they cost me \$40 apiece. I bought a cable second hand that cost me \$3. The man who fixed it up charged me \$40, and a boiler was the rest of the expense. We handled all of our clay last year—30,000,000 pounds—and did more satisfactorily than by anything I have ever handled. We are not using it at the present time because we are mining our clay now and have a hoist that brings it up on a track; but for an open mine at any place I don't know of a simpler arrangement than that, and it cost us practically nothing to handle our clay. One man did all the work. I don't believe the whole outfit cost us outside of the power over \$300 to install it.

For the overhead tramway I had an inch cable. I took an oak pole and set it down into the ground, first putting under it a very strong foundation of timbers and rocks, so that it couldn't press down into the ground. I bored a hole and ran this cable through and fastened it to a "dead man" and fastened the other end to an oak tree, so that it could be pulled taut. It is something that a clay plant of any kind could install, and it is not expensive. The catch at the top was simple. When the bucket came up it caught and fell back; and when it came up the next time a little strip would

pull the hooks and let it down. I would be glad to have you look it over or make drawings for you at any time.

President Bracht: I haven't seen Mr. Schurr come in yet. I know they have a tramway up there. If there is no further discussion we will pass to the next item. The subject is "Ideas on the Economical Arrangement of Medium Capacity Brick and Tile Plants." I have the pleasure of introducing Mr. G. E. Luce of the Luce Engineering Co. of St. Louis, Mo.

#### IDEAS ON THE ECONOMICAL ARRANGEMENT OF MEDIUM CAPACITY BRICK AND TILE PLANTS.

Mr. Chairman and gentlemen of the Convention, I don't know just how to start on my subject except by telling a little experience that happened to me last night. I was in my room somewhat late and in going down stairs I met a gentleman at the bottom and saw he had a button on; and I walked up shook hands with him. He said, "Who are you?" I said, "I am an engineer." "What kind of an engine would you prefer to run, a slide-valve or a Corliss?" I didn't answer.

I have not had the privilege of your former Convention nor the pleasure of travelling to any great extent in your state. Therefore I cannot be as conversant with your local conditions as I would wish to be, but presume they are about the same here as in the adjoining states.

Some time ago, when in our St. Louis office, our Mr. Gibson handed me a letter from your Association asking some one of us to prepare a paper for this Convention, and I answered that letter saying we would—little expecting I would have this to do, but recently our office notified me that I was expected to do this as the others had tasks for other Conventions.

The subject on which I am to prepare this paper is a surprise to me, and the subject reads, "Ideas on Economical Arrangement of Medium Capacity Brick and Tile Plants."

As you are all aware, this is an important subject, and first of all, just what does this subject mean?

Does it mean "Ideas on Economy" in the building of a new plant, or does it mean "Ideas on Economy" in the operating of plants after they are built, or does it mean "Economy in relation to Capacity," or does it mean "Ideas Regarding Brick and Tile Plants?"

It seems to me it means all combined and I assure you it is quite a problem for the writer, for he feels his inability to answer this question or questions just as he would wish, to the perfect satisfaction of even himself.

If it means economy in building the plant then we have so many things to consider, and, let us see, where are we going to build this plant?

Is it on the level ground, and how can we get drainage?

Is the plant to be on the wash side of a hill? If so how much drainage goes that way?

Have we tested the land to know just what kind and how much material we have?

What kind of a test have we made, and have we dug some five or six holes on one hundred and sixty acres of land five or six feet deep, and pronounced it O. K., or have we drilled a hole over seventy-five feet each way and tested the material from each hole?

If so, then we know just what we have in clays.

Have we surveyed our siding and has the railroad engineer done this after showing him about where we wanted it, regardless of many conditions that should be considered.

Namely, the relation of kilns and dryer with relation to prevailing winds.

The harvesting of our clays with relation to their levels and best deposits.

But, assuming these matters have all been fully gone into, and have been found fully satisfactory, how shall we build the plant? What system?

Let us not discuss any of the systems but stiff mud, and presume that the kind of a plant that is best adapted to our conditions.

#### ECONOMY IN BUILDING.

In this kind of a plant conditions vary so much, how shall we answer your question?

We find plants costing \$200,000 producing 350,000 to 375,000 brick per day. These of course are machine yards of large capacity.

But we find other yards costing \$200,000 producing 100,000 brick per day and these of course are machine yards.

We find investments of from \$65,000 to \$100,000 producing from 50,000 to 65,000 brick.

Of course these references are all regarding building and paving bricks plants using common clays and shale.

In this regard I wish to quote one of the most prominent brick makers in the world.

"Why make building brick from anything but common clay, or try to make paving brick from anything but shale?"

In view of this wide variance, what kind of a plant are we to build?

It seems to me we would know more things about our special clay and conditions before building our plant, in order that we may build the largest capacity for the least possible money.

So it seems to me that the entire proposition is not "Economy in Building," except in regard to operation.

In other words the first cost of building the plant only relates the cost per thousand capacity.

#### ECONOMY IN OPERATING.

I might suggest how and show you the drawings of plants, if this is to be a new plant, where the least amount of steam piping is required to connect boilers to the engine.

The most economical way to get the coal into the boiler room. The best system of trackage into dryer kilns. The best system of railroad switches. The best dryer kilns, building and they would all be economy in operation.

I say the best and assure that I am correct, because it's matters of figures as to condensation, distances of travel and various other deductions and data.

But this is not what you want of me, I am sure, as I see by the other papers many of these things are to be discussed, and by able men than I, so this is not the question you wish me to try to answer.

You say we have our plants already built.

We have gone through all the experimenting, our clay was fully and thoroughly tested, we know just what can be done and just what can't be done.

We also know just what the same man who did the testing told us we could make out of this business, and we further know just what we have made.

If our testing and information acquired at the time were weighed in the same balance with dividends, we would see more plainly, in many cases, where things might have been different, if not better.

But how can I apply economy to my already built plant? That is, what would be the easiest line of resistance to apply economy.

In trying to answer this question, I wish to embody the question "Economy in Relation to Capacity," and, furthermore, to condense the question and finish my paper along the line of my first impression. Let us call it

#### "IDEAS OF ECONOMY."

Why should there be such a difference in the cost of constructing a plant and relations shown in different sections of the country?

Is there a difference in the plan on which these plants are built, and can I not adapt the same plan?

In many cases, "Yes."

Is there a difference in the clays—"Yes."

But in many cases they are the same or can be worked to the same advantage.

Is there a difference in the machinery employed?

Some, I might say, but in this regard many of us do not know what we are now using, nor what our neighbor uses, except the name of the maker or of the machine.

Is it because the other manufacturer knows his clay better than I do?

In some cases, "Yes," and in other the adaption of the machine, and other conditions bring about the results without the manufacturer actually knowing why.

The great thought of economy and the point to which I want to call your attention, is the machinery itself.

How does it build the column and what shape does it deliver the same to the offbearing belt?

Does it deliver it so it can be dried in twenty-four hours, and so it can be burned without cracking, and possibly without water-smoking?

If it does not, it or something is wrong—thus the greatest difference in construction.

Thus the difference in cost of production,

Thus the difference in cost of operation,

Thus the difference between debt and dividends.

Does your machine deliver the column the densest in the center, or is it the densest on top, compared to the bottom?

Is it the densest on one side, considering that you are running side cut, but that makes little difference?

You say that you have not noticed this and cannot believe it to be any different than uniform.

Let me ask you, how does the machine form the column?

It can do it by no other operation than creating enough pressure against the inside of the case to overcome the pressure around the shaft of the screw.

When this pressure is overcome, the clay is held by the outer pressure, and the screw turning backwards, moves the clay in a straight line—less the difference occasioned by relief of pressure due to difference in amount of clays in the lack of the machine at different times.

Then, why should this create different densities?

Because of the different areas, namely the shaft through screw is about 10" in diameter or 30" in circumference.

The difference in areas would mean as 30" in to 75", so would be the difference in pressure, or for example, 5 lbs. pressure around shaft of screw would be overcome by 2½ lbs. of pressure in inside of case.

By these calculations you can see the difference in pressure on the column and in many cases a corresponding difference in weight can be found in the center one-half of the brick and the outer one-half.

We do not stop to consider these things many times so let me give you some few figures taken from some of the standard machines.

I am dealing now entirely with the front of the machine from the straight part of the barrel to the end of die.

In one machine we find the opening in large end of nozzle 26", small end 14", difference 12".

In another 26" on large and 20" on small end, difference 6".

These conditions can be found on adjacent yards.

Now surely both are not correct, for there would be a vast difference in compression provided there was no back pressure.

Then in the augers used, how are they; some use 1½, others 2½ turned screws, and how about their pitches?

One leads off on big end with 5" pitch, the very next thread is 6", or in other words the clay released from pressure in second turn of screw, for it passes into a larger space.

In other screws we find this reversed.

Which is right?

Surely both are not.

Again in one machine we find the augur 16" from end of augur to end of die, in another 8".

Surely there must be a difference in this resulting from friction, in the difference in distance through which the clay is forced.

Then what kind of a die have we?

There are many kinds. They have all good strong features fitting our several machines and ideas.

Some we find by measurement, at opening nearest machine, to be 34" larger than our brick size, others six inches larger.

Some, and I might say the majority, use steam for a lubricant.

That, is steam on top and part way down sides, and water on the bottom.

Is this correct?

Is there such a difference between the result of screw and case, that it overcomes the difference in lubrication between steam and hot water?

Or, really, is here not some of the trouble we are paying for each day.

Then, one man's idea is to grind his material to a certain fineness, but few actually know just how fine.

They can give you the screen they use, but that really represents nothing.

What per cent would pass through a certain mesh, etc.? Does this make any difference?

Surely it does. In fact we should know just how coarse we can make our material, for it not only means capacity of our grinding machinery, but horse power and density of our column.

One man has two pug mills and wishes for another, another has only one little mill; both work the same clay.

Another man has a very large heavy machine closed in, and he starts to making the product in the end by closing the gates.

Who is right, and why do these fellows all, apparently, get good results from different ideas?

Have they got different machines (not makes) but different constructions, and have they different ideas?

The only thing they have is the same market less the difference between political, social and financial pulls.

But I can say this question is "Ideas of Economy" and how does density of the brick affect economy?

In many ways:

In drying we often condense the dryer and this has been done so much that in all dryer contracts we have this clause, "If the clay will stand the heat and circulation."

The clay has little to do with it.

Isn't it the shape the clay is in?

In some cases we have a band of clay on the outside made with one-half the pressure the inside is.

How can we dry it?

In many cases this is so pronounced it cannot be dried by any process.

In burning we find many spending more time water-smoking than in burning, why?

The brick won't stand quick shrinkage—is dense in the center.

These same fellows could often burn their brick without water-smoking if the brick were so formed that they could shrink without breaking and many tons of coal could be saved by using the gases formed by combinations of water and heat.

This is all thrown away when we water-smoke, and our time is spent and oftentimes we find them carrying tons of clay and ashes and other material on top of kiln to stop leakage of heat.

Why not use the steam of water smoke as a blanket, getting the result of its gases as well as its retaining power toward the heat.

Then would we have to build the expensive clamp wall wasting our money and restricting our output to our kiln capacity?

What else does it affect?

Why the amount of clay to be used.

We have a good enough face on our brick. We just want to take out three or four ounces from the center of the brick, then we reduce the horsepower needed to manufacture the brick.

These, from this point of view, must be vital points in "Ideas of Economy."

But you ask, how can this be accomplished?

Can it really be accomplished? "Yes."

It has and is being accomplished and in these days of rapid building industry, must be in order that the brick maker may maintain, in the building world, his position against the cement block business, or rather the cement block machinery business and other patent medicines on the market, and we must push forth every effort to not only produce the best article, but the cheapest and especially enough that we may have brick when they are wanted in the spring.

What are essential to accomplishing the results?

Grind or prepare the material to proper consistency, that is, the coarsest possible to get a good face on the brick; feed it into the pug mill uniform and arrange the feed of the knives in the pug mill so there will be a uniform feed—not one point full and under pressure and the other point empty.

Feed the machine regular and have the knives set so as to keep the back as near clear as possible, and have the clay in the machine travel at uniform increase of speed.

Especially run the machine so that the augur will empty itself each revolution.

Don't let the augur turn on the clay many times before it strikes the die.

If the augur does not do this, have one made that will.

Have the compression in the case made just as small as is consistent with a good face on the brick.

And, last but not least, have the augur near the case, in fact, only clearance and make the most compression in the die.

Why there is no chance there for lamination and all the weight of clay, augur and everything is behind the clay, at this point use the die that can be lubricated all around with steam, or if with any other lubricant, have it uniform.

I have not said much about tile plant and should, but feel I have taken up enough time already, and should give others a chance.

I want to thank you all for your indulgence and hope, if I have not done anything more, that it will arouse with some, the thought of betterment of our condition and that it will make us think, investigate and improve.

of the cost of an average brick residence.

Let's not sit down and say we are satisfied with ourselves.

Again thanking you and wishing you a prosperous year.

President Brecht: This paper, gentlemen, is now open for discussion. Surely you are not all making brick without having some difficulties, and Mr. Luce has brought out, it seems to me, some of the difficulties which most of you have met with some time or other.

If there is no discussion, we will pass to the next. We will now listen to Mr. O. C. Pixley of Des Moines on "Residences of Brick and Hollow Block—A Present Day Economy."

#### RESIDENCES OF BRICK AND HOLLOW BLOCK—A PRESENT DAY ECONOMY.

A few years ago the name Hollow Block may have sounded all right as designating a clay product, but since certain interests have been selling Cement Blocks, advertising block machines, disposing of State, County, City, backyard or any other kind of patent rights and inaugurating advertising campaigns that have been more than successful in

placing their products, I, before the American people, believe that we clay manufacturers should insist on our product being known as Hollow Building Tile. The word Tile seems to have just the proper ring to it. Hollow Building Tile suggests a clay product immediately. It does more than that—the word Tile carries with it the suggestion of a high grade product. You suggest to a prospective customer that he uses Building Blocks in his new residence and he will ask you how much he can save by so doing. Suggest that he use Hollow Building Tile and he will invariably ask how much more they cost than brick.

When we hear the word Tile we intuitively think of England, Holland and the other European countries where tiles have been made for centuries and always have been a creditable product. Mention Hollow Blocks in any part of the United States today, and there will be those within easy earshot who have paid dearly for investing in Cement Blocks. I would suggest that this convention requests our Clay Journals in the future to use the name Hollow Building Tile to designate our clay product and distinguish it clearly from Cement Blocks.

It was part of my early training to take whatever came to me and make the most of it. When our good secretary, Mr. Platt, suggested "Residences of Brick and Hollow Block—A Present Day Economy," I accepted it without realizing how little, legitimately, could be said on the subject. Had this subject been allowed to come to us as it originally stood, it would have been broad indeed, for there is much to be said in behalf of Hollow Building Tile as a construction material for residence work. Secretary Platt, however, seems to have done just as his illustrious namesake has been accused at times of doing—he tacked on, as an amendment "A Present Day Economy" and as is usual with an amendment this cuts the entire life out of the original subject. I suppose the word Economy as used in the subject given me means simply so many dollars and cents saved in the building of a new brick residence. In this sense, there is comparatively little economy in the use of hollow building tile in combination with brick. In building brick residences tile are used extensively today, in foundations, basements and for backing up outside brick walls. Face Brick are expensive, but hollow building tile is used simply to take the place of the cheaper grade of builders that would otherwise be used for backing up these walls. Were it not for the fact that tiles can be laid up so much more rapidly than common brick, the amount saved by using them would be little. Walls alone are a small part of the expense of building a modern house. The excavation, concrete, cement work, roof, floors, partitions, plumbing, plastering and the thousand and one other items that are absolutely necessary, are what make an up-to-date home expensive.

It is hardly fair to expect the use of tiles to effect a decided saving in the entire expense of a residence, but I believe I am justified in making the statement that wherever tiles are used it would cost 50% more to use common brick in their stead and that if hollow building tiles are used, as they should be, in the foundations, basement and for backing purposes, there should be a saving of from 6% to 10%.

If by this word economy we do not limit ourselves to the simple financial saving in building a residence, then I can assure you there is much to be said on the subject. Today, a house that is a few years old is out of date, for during that short period much has been given to the improvement of residences. The empty houses today are the old houses. The new flats and houses are all filled, as they are up-to-date and have modern improvements. It would be difficult to find an architect or builder who would refuse to say that a hollow wall is not only a superior wall but the best wall for residence work. Renters and prospective builders are aware of this fact and the time is at hand when residences in which Hollow

Building Tile are used, are being given the preference.

If by using the tile less coal will be used during the winter, if they make a cooler house in summer, if they make a dry house throughout the year, in short, if tile make a better residence than solid brick, then there is certainly another side to this word Economy, a side more important than the mere saving in the original cost price. Although this is all I can say in reference to Hollow Building Tile as used in combination with brick, I do wish to say a few words in reference to tile as an independent building material.

When this convention met in Des Moines two years ago I had the pleasure of saying a few words in reference to tiles. I wish to say that today I stand in a little different position than I did at that time. We were then manufacturing hollow building tile exclusively. It was our only product. At present we are endeavoring to also place upon the market a high grade face brick. I would not have you understand that I have experienced a change of heart in the reference to the many good qualities possessed by hollow building tile for, quite to the contrary, I see greater possibilities in this product than ever before. Our plant, however, is not large and its output of face brick alone is necessarily limited. On this account it is not so important to us whether building tile is in demand during the coming season. It is the history of every building material that from a modest beginning it has grown and developed into a satisfactory and useful material. I believe I would be safe in stating that our first log house was not an extensive affair. The first stone house was probably no larger or more elaborate. Did you ever think that when the early pioneers came out of the east and located in Indiana, Ohio, and other parts of the "far west" as it was known at that time, if they had had an unlimited quantity of lumber piled on the very spot which they had chosen as a building site they could not have used it. They had no nails, no tools and no experience. They used logs for they knew how to build a home with them that would keep out the frost, the wolves, and disease. There is no question but that frame dwellings were a decided improvement but it took time to adopt them. We can all of us remember when the balloon frame buildings first came into use for it was not so many years ago that we discovered it was not necessary to use a 12-inch square purline plate to support a shingle roof. This makes me think of an experience I had four years ago. At that time we were just starting the manufacture of hollow building tile in Des Moines. I learned that at a certain place a residence was to be built and quite timely I approached the excavation and fortunately found the architect there. After approaching him with due consideration I suggested that perhaps hollow tile could be used in this foundation. I shall never forget the look he gave me when he said, "Why, sir, the weight of the entire structure is to rest on these walls." Of course, that was enough and I said no more but in about one month's time I took occasion to go and see "the entire structure." I could not have carried it off on my back had I tried but it would not have taken a very large wagon to have done so. It was a one story frame dwelling and a small one. I was interested enough to enter the basement and see what he had used as a foundation and found that under "the entire structure" he had placed a solid 12-inch brick wall. There is no question but that this foundation would support a dwelling of this nature. Neither was there any question in times of old but that a 12-inch purline plate would support a shingle roof. We no longer see the massive frames that we had in the days of old as they are not necessary and the great walls of solid brick in a few years, and in fact today, are a thing of the past. I remember the first balloon frame built in our section of northern Ohio. There was a question as to whether it would stand. A windstorm came and wrecked some of the older buildings but the balloon frame stood.

Millionaires are living today in stone mansions that are but a development of the first stone hut. There is a theatrical term with which you are perhaps acquainted. Managers do not always start a show in a large city, but on the contrary they take it to some small place and as they express it they "try it on the dog." This does not seem to be the history of the hollow building tiles. When the great world's fair buildings of Chicago were being put up hollow building tile were used extensively for foundations. This was about the first practical work. If that was trying it on the dog it was a fairly good sized dog. A little over a year ago, John D. Rockefeller, Jr., built a new home. I suppose he would call it a cottage. Be that as it may, it cost over \$3,000,000. We suppose he had an architect and that he asked for a modern house. It was built of hollow building tile roughly plastered on the outside and on the inside and treated to a Portland cement coat outside. Edward Bergstrom is one of the well known architects of the Pacific coast. He has just completed a residence for himself and family in Los Angeles. The home cost not less than \$20,000, and is made of hollow building tile throughout; plastered inside and treated to a coat of Portland cement as an outside finish. It seems that we have started with the large buildings first in using this material and the time is here when hollow building tile are to be used extensively for residence work.

In this great agricultural state of Iowa there are exactly as many silos as counties. Our agricultural colleges are constantly telling us that instead of one silo to a county there should be practically one to each farm. It is safe to say that within the next few years many of these will be built throughout the state. There is no more suitable material than hollow building tile for this work. A silo should be built of material which will not easily rot or disintegrate and should be as nearly air tight as possible. I merely suggest this as a fertile field for the hollow block manufacturers to exploit.

President Brecht: This paper is open for discussion. That dinner last night seems to have had a bad effect on you gentlemen that took part in the discussion yesterday!

Mr. Dennison: I would like to indorse what Mr. Pixley said in regard to the use of hollow blocks in building dwellings. I can recall that in the discussions of this Association at former meetings the hollow block proposition was not received very cordially. Possibly I have had quite as long an experience as any one in the state in manufacturing hollow blocks, and I have had to do quite a little pioneering. The first difficulty I found in introducing the hollow block into use was with the bricklayer. He regarded it as an invasion which interfered with his occupation. In the first place, he regarded it as forcing him to become a stone-layer instead of a brick-layer. He couldn't toss the block up and turn it over with one hand. But gradually he came to recognize the fact that the hollow block was the best inducement he had for the people to use more brick; consequently he discovered in a short time that there were more days' work for him in a year, because there were more buildings built and more occupation for the brick-layer. Notwithstanding he hadn't as many days' work on a job, he had more jobs. The only way that I had to overcome the prejudice of the brick-layer was to demonstrate to the owner of the building that it cost him less money; and by putting the question to him, "Are you building for the brick-layer or for yourself? If for the former, build it of brick; if you want to build for yourself use the blocks." In a very short time the brick-layers were plugging for hollow blocks instead of brick.

I had an experience in building a small dwelling house for myself in which we used pressed brick on the outside and hollow building blocks to back up the outside walls. All of the partitions through the building were made of hollow blocks. There are hollow blocks in the floors and reinforced

concrete supporting them. The entire foundation is made of hollow blocks. The building is two stories, a basement, and an attic, although quite a roomy place. It is the most satisfactory dwelling that I ever lived in, from the fact that it is very uniform in temperature; it neither gets very cold nor very warm. All this winter repeatedly the fire is entirely gone in the morning and still the house is very comfortable, and the water in the radiators is standing at 100° simply because it doesn't radiate. Being a clay man I sought to use as much clay as I could in the construction, and used clay tile floors entirely through the house—even the Elk's club in the basement. (My wife has a Dorcas Club in the attic, and my boys have an Elk's Club in the basement; we get them as far apart as we can!) I simply speak of this as indorsing what Mr. Pixley has said: that if we could illustrate our occupation by using our products ourselves, we might get more people to use hollow blocks.

President Brecht: If there is no further discussion on that subject I will ask the secretary to read some communications\* which he has here.

Secretary Pratt: I have here a letter from Mr. Geo. H. Hartwell, Secretary of the Illinois Clay Manufacturers' Association:

CHICAGO, January 17, 1908.

C. P. Platt, Secretary Iowa Brick & Tile Association, Van Meter, Iowa.

DEAR SIR: At the recent Convention of the Illinois Clay Manufacturers' Association held in Peoria the following resolution was embodied in the report of the Committee on Resolutions:

*Resolved*, that this Association appoint a Committee of Publicity for the enrolling of a definite plan whereby greater publicity can be given to the value and adaptability of all clay products to national needs, and that the Secretary of the Association be instructed to communicate with the State and National Associations, requesting them to appoint similar Committees with the ultimate object of a General Bureau of Publicity for all clay product representation."

You will be aware upon reading it of its intrinsic importance to the welfare of the clay working industry throughout the United States. It is with pleasure that I ask the cooperation of the Iowa Brick and Tile Association in this matter, and I trust that at your forthcoming Convention a Committee of Publicity will be appointed which will work cooperatively with Committees of other clay working organizations to evolve a plan by means of which a representative General Bureau of Publicity shall be established to effectively represent the clay industry throughout the country.

I would also request you to write to the Wisconsin Clay Workers' Association, the National Brick Manufacturers' Association and other like organizations, requesting the appointment of a similar Committee of Publicity.

Mr. H. de Joannis will be present at your meeting and will be glad to enlarge upon the scope of this resolution.

Very respectfully yours,

GEO. H. HARTWELL, Secretary.

President Brecht: I would ask Mr. de Joannis to explain this idea more fully.

Mr. de Joannis: The proposition is a very simple one and eminently a business proposition. The cement people have been excessively active, as you know, within the past five or six years, and the success of the product—its wide use—has been largely due to the amount of money they have been willing to spend on the advertising. No matter how poor the material may be, under certain conditions (granting that you spend the cash to attract the public eye and get them interested) results are always forthcoming. In spite of any

\* Same letter was sent to all other clay manufacturers' associations in United States and Canada.

particular collapses that may have happened in concrete structures, in spite of damp walls and ruined furniture and disintegrating foundations, the falling of concrete roofs, etc., that we hear about from time to time, the fact remains that all the cement people, no matter how widely diverse they may be individually or how they may cut prices and cut each others' throats, are all together in one great idea: that cement and concrete shall be held up before the public as being the ideal building material. So we see that it is co-operation in making the merits of the material—or its alleged merits—manifest to the public.

I think that it is a disgrace to the clayworking industry—an industry which has such antiquity, an industry which stands possibly only second to steel of all the industries of the country,—that we have not a general publicity bureau to represent us and force upon public attention the fact that this material is the best in the world for all building purposes. There have been two cases where the clay people have taken up this matter. The National Paving Brick Manufacturers' Association has organized itself and has an excellent general publicity bureau for disseminating the value of paving brick throughout the United States, and the results of the effort have been phenomenal. The manufacturers of all tile, representing ten or twelve factories in the United States, have an excellent bureau, and will prepare articles and send photographs to any paper willing to publish them; and great success has been attained by that bureau in introducing clay tile. If they can do it in a small way we should be represented as a clayworking industry by a general publicity bureau. The thing ought to appeal to you from a business standpoint right away. We haven't got it. The next question is, how shall we get it? The first step to take was to frame a resolution which would embody the germ of the idea: for after all you must say something, even if you are wrong, in order that somebody may be able to say that you are wrong and the right idea may get started. For that reason the Resolution is presented to you that we should have representing us as a clayworking industry a general publicity bureau. The resolution is submitted to you, and will be also the other Associations, in order that we may get Committees appointed to consider this question and consider the possibility (not the advisability, because that is assured), commercially and financially, of establishing a general publicity bureau.

The first thing is to get this Committee of five or seven members appointed. They should be selected from different parts of Iowa, so they will be able to tap the different territory for the information required. They will work co-operatively with the other Committees appointed by other organizations and submit to each other or to any one given person on these Committees the data and photographs that are necessary for the issuance of a publication—a pamphlet or book—which will represent all the interests of the clayworking industry. I believe this is feasible from the beginning. If that were done, then I would say the next step would be to secure an appropriation from the different organizations or from the different clay manufacturers who are directly interested; a modest appropriation, but one which would insure providing for a salary of from \$2,000 to \$2,500 for some man, who will maintain an office and be the center for the accumulation of all such data and photographs and for the dissemination of all knowledge which may be required by clay-workers' throughout the United States. That is a secondary step, not because of secondary importance, but because of secondary importance, but because we are all up against the dollars and cents proposition.

But the national step is that there should be some definite plan of action formulated by these different committees which will result in the accumulation of the essential data for presentation to the general American public, and which shall show the advantage of each specific clay product to be

embodied in that booklet. It can then be printed, and will be for purchase and distribution by the clay manufacturers throughout the United States; so that whenever they want to attack a new territory for trade they will have something in hand which is authorized by all the different clay manufacturers' associations, and which will force the public to recognize that the general clay manufacturers' industry of the United States has a number of organizations which are able to back up the products by literature of that character and give a guarantee of the stability of the products which they request them to use.

President Brecht: Gentlemen, I think the passing of this resolution a splendid move of the Illinois Association. If there is anyone here who wishes to discuss the matter let us hear from him. If not, I will ask the Secretary to again read the resolution as passed by the Illinois Clay Manufacturers' Association and ask your wishes in the matter.

(Secretary Platt thereupon reread the resolution).  
Mr. McIlrose: I move the adoption of the resolution and that the incoming President be authorized to appoint a committee of five in accordance with the resolution.

Motion seconded by O. C. Fixley and carried.

A recess was thereupon taken to 1:30 p. m.

#### GROUND FOR \$50,000 FT. DODGE FACTORY TO BE BROKEN WITHOUT DELAY.

L. E. Armstrong, general manager of the Plymouth Clay Products Company, Ft. Dodge, Ia., has authorized the statement that ground is to be broken at once for the new pottery, which has been talked of here for some time past. The plant will be constructed and put in operation as rapidly as capital and men can make it possible. The new plant, which promises to be one of the best labor employers in the city, will be situated alongside of the Plymouth Gypsum company and Plymouth Clay Products company plants, southeast of the city. It is estimated to cost \$50,000, will be of brick, and in every way will be strictly modern. There will be four kilns, and the capacity of the factory will be about 10,000 gallons of stoneware per twenty-four hours.

The pottery, or stoneware plant, will be built so that when the business warrants the addition it can be doubled in size and capacity. That will make it cost an additional \$500,000 and will add four more kilns.

George M. Thompson, recently of Whitehall, Ill., and formerly manager in Fort Dodge for the plant of the Western Stoneware Company, which was burned a couple of years ago, will be the superintendent of the pottery for the Plymouth Clay Products company.

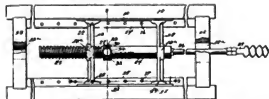
The Fort Dodge pottery will make everything in the white and dark stoneware line that is made anywhere. Clay will be got from below the gypsum rock, and is the same quality that is being so successfully used for the making of sewer pipe by the same company. It has been put to all manner of practical tests and makes high grade ware. There is practically no loss in burning or by "air-cooling" afterward. The latter fault was one of the great obstacles in the way of the success of the old pottery here.

The announcement of the erection of the factory follows the receipt of assurances from the railroads that Fort Dodge will be put on a fair competitive basis with the potteries of Red Wing and Mounds, the two places that will have to be met in this field.

# NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

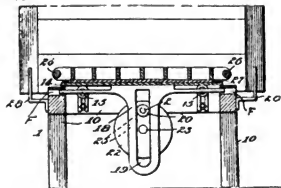
876,048. Earth-boring Machine. Patrick Fenton and Frederick W. Waechter, Knoxville, Iowa. Filed April 12, 1907. Serial No. 368,095.



Claim—An earth boring machine, comprising a frame, angle plates on said frame, connected machine heads in said frame and engaging said angle plates, a feed bar mounted in said machine heads, screw connections between said feed bar and one of said machine heads, means for connecting an auger to said feed bar and means for connecting an auger to said feed bar and means for rotating said feed bar.

In an earth boring machine, machine heads arranged parallel with each other, one of said heads formed with a screw box, the other of said heads formed with a smooth box, plates connecting said heads, means for anchoring said heads, a feed bar mounted in the boxes of said heads, a gear on said feed bar, eye-plates on said feed bar adjacent said gear, a reversible pawl on said eye-plates engaging said gear and a handle removably and replaceably mounted on said eye-plates.

875,879. Attachment for Brick-Machines. Eli H. Zeigler, Stewartstown, Pa. Filed Sept. 28, 1907. Serial No. 304,993.



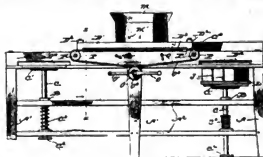
Claim—In a machine of the class described, a reciprocating platform, a crank through which elongated motion is imparted to said platform, mold box guard strips secured to the platform, and stationary knocker arms disposed in the path of movement of the mold box and arranged to abruptly stop the same without interfering with the movement of the platform.

876,782. Process for the Manufacture of Artificial Stone. Heinrich Dresler, Crenzthal, Germany, assignor to Coln-Musener Bergwerks Actien Verein, Crenzthal, Germany, a Corporation of Germany. Filed Feb. 14, 1906. Serial No. 301,041.

Claim—The process of manufacturing artificial stone, which consists in grinding slag, mixing it with water, pressing it, and then subjecting it for a considerable time to the action of carbonic acid gas under pressure at the ordinary temperature substantially as described.

875,776. Machine for Making Bricks. George Burson, Winamac, Ind. Filed Feb. 18, 1907. Serial No. 357,988.

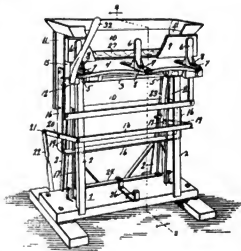
Claim—In a device of the kind described, the combination with a table, of separable molds slidably mounted on said table, removable bottoms arranged in said molds, means arranged on said table for opening and closing said molds, and means for reciprocating said molds, for the purpose described.



In a device of the kind described, the combination with a table provided with spring actuated platforms, adjacent each end, of separate molds slidably mounted on said table, removable bottoms arranged in said molds, dividing plates secured in said molds, means carried by the table for opening and closing said molds, and means for operating said platforms, for the purpose described.

878,542. Cement Block and Brick Machine. Solomon M. Kimble, Jackson, Mich., assignor of two-thirds to Simplex Manufacturing Co., Jackson, Mich. Filed Mar. 5, 1906. Serial No. 304,232.

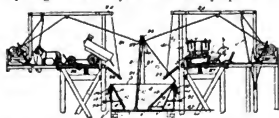
Claim—A mold of the character described, comprising a suitable frame, a bottom, a mold-section mounted to slide vertically with respect to said bottom, an actuating lever pivotally connected with the mold-section, an adjustable stop for supporting the mold-section, and a trip for disengaging said stop.



A cement brick and block machine, comprising a suitable frame, a mold mounted thereon consisting of a trilateral section forming three sides of the mold, a bottom, the fourth side of the mold carried on said bottom, said bottom and fourth side movable away from the remaining sides, the trilateral mold-section being vertically movable with respect to the bottom, an actuating lever pivotally connected with the vertically movable mold section, an adjustable stop for supporting said mold section, and a trip for disengaging said stop.

876,896. Combination Dump and Hopper. Timothy Carroll, Anaheim, Cal. Filed Apr. 10, 1907. Serial No. 367,461.

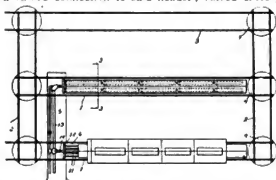
Claim—The combination of a plurality of dumps and a hopper between said dumps having lateral and central openings, a lid for the central opening, elongated covers respectively hinged between the central opening and the lateral openings on opposite sides of said central opening, and means for swinging the covers to alternatively cover and uncover said openings substantially as and for the purpose set forth.



A hopper having a plurality of openings in the bottom thereof, hinged lids for each of said openings, means for alternately isolating one of said openings from another or both of the others, and means for controlling said means for isolating said openings.

875,704. Drier. Herman J. Gerbsch, Wausau, Wis. Filed May 31, 1907. Serial No. 376,574.

Claim—The combination with a track, of a plurality of cars adapted to receive the articles to be dried, said cars having roofs adapted to form a substantially continuous roof when the cars are arranged end to end; the said car roofs being provided with ventilators; side walls for said cars adapted to form the cars into a continuous chamber; end walls for the outer ends of the end cars of the series; a tunnel beneath said track; steam pipes arranged in said tunnel; a header for said steam pipes; a deflector arranged longitudinally above the steam pipes; a steam supply pipe for having a valved connection to said header; valved cross pipes



for the said steam pipes, and valves in said steam pipes arranged at the rear of and adjacent to the said cross pipe, dividing said steam pipes into sections corresponding in length to the length of the cars, for the purpose specified.

#### SIGN SCALE FOR MINING CLAY

The scale for the mining of clay in the coal mines of the district was signed by the miners and operators about Brazil, Ind. The scale to be paid the coming year is 40 cents a ton for clay two feet nine inches and over and 42½ cents a ton for clay between two feet and nine inches and two feet and three inches. All clay mined below this thickness is to be paid for by the day. This is the first real scale ever signed in the block coal field for the mining of clay. The rapid growth of the clay industry in this city has made the mining of clay quite profitable. The clay is taken from the mines in which the coal is found.

#### THE LEHIGH SEWER PIPE AND TILE COMPANY

Big factory about ready, the Lehigh mammoth sewer pipe plant is completed and machinery being set, ready to manufacture ware May 5th. The mammoth factory building of the Lehigh Sewer Pipe & Tile Co., of Lehigh, Iowa, has been finished and the machinery is being put in place and the work on the kilns rushed so that it is expected by May 15th, this big concern will be in readiness to manufacture ware. On Sept. 3rd 1907, the Lehigh Sewer Pipe & Tile Co., started to grade the ground for their factory building and since that time, the work of constructing their large brick factory has been rushed along, at times as high as one hundred men being employed. On account of the open winter the work was not delayed and during the six months time intervening, since that date the place has undergone a wonderful change and there now looms up an imposing brick structure 250 feet long by 160 feet in width, three story high and a basement. The main building is 252 feet by 80 feet three story high, with a basement and directly to the south of this is the machine, engine, boiler and clay rooms, which is 160 by 70 feet.

The entire building is a solid brick structure with cement floors in the boiler, engine and machine rooms and besides being built in the most substantial manner, and is constructed so that the entire building presents a very pleasing appearance from the outside; the machinery for this plant has been purchased in Ohio, and is being erected by the company's erecting engineer, besides these 300 horse-power high pressure boilers, which have already been set, a three hundred horse-power engine is required to turn the machinery for the plant and a smaller one will be installed later with which to run the dynamo. The plant is equipped with two wet-pans eight feet each which is used to mix the clay for the large ware; in addition to this is a nine foot dry pan. The clay is elevated from the pit by a large drum, which brings the clay to the clay bins on the second floor and is automatically dumped into the bin or to the wet-pans as is desired; the clay bin is 60x70 feet inside and 25 feet deep and holds over 200 tons of clay.

One steam elevator and three gravity elevators are placed in the factory to give access to every floor. At the present one sewer pipe press will be installed and the company has arranged so that the capacity of the plant can be doubled without any great expense, or so as to put out of harmony any of the perfect workings of the factory, which have been planned with so much care. Ten kilns will be built with which to burn the product of the factory, two of these kilns have already been completed and two more are nearing completion, they are built of St. Louis fire brick and are the sewer pipe down draft pattern.

The factory at the start will have a capacity of one 30-foot kiln per day or about three carloads of finished product, this factory is the largest sewer pipe plant in Iowa and is built at a cost of over \$200,000.00. The company has an inexhaustible supply of fine sewer pipe clay (and the quality of Lehigh clay is unquestionable) and without doubt with the improved machinery they are installing in their factory they will turn out a grade of ware that cannot be excelled. The men who are at the head of this company are: E. J. Breen, President, J. B. Spalding, Vice-President G. A. Lyon Secretary, Chas. Larrabee, Treas. G. C. Finley, Supt., besides the officers of the board of Directors consists of, W. N. Colby and F. J. White.



## CLAY RECORD.

PUBLISHED SEMI-MONTHLY BY THE

CLAY RECORD PUBLISHING COMPANY,

Ninth Floor, Plymouth Building,

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CHICAGO

GEORGE H. HARTWELL, EDITOR

## SUBSCRIPTIONS

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and one dollar fifty cents for all other foreign countries.Papers are not stopped at the end of subscriptions unless the  
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Vol. XXXII. APRIL 15, 1908. No. 7

"I like to read American advertisements. They are to  
themselves literature, and I can gauge the prosperity of the  
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the  
very time that advertising should be the heaviest. Ninety-nine  
out of every hundred merchants advertise most when there is  
least need of it, instead of looking upon advertising as the pan-  
acea for their business ills.—John Wanamaker.

A rolling man gathers lots of dust.

Treat the rich man kindly; you may be willing to let him  
lend you money some day.

The average man hasn't enough courage to applaud until  
some other fellow starts it.

Remember that the ill natured gossip you hear concerning  
others is not worth remembering.

If men were to write their own epitaphs marble cutters  
would be compelled to work over time.

All men may be born free and equal, but it's a waste of  
time trying to prove it to the satisfaction of a woman.

"To the progressive manufacturer, the trade paper has  
become an important part of his business machinery—a ma-  
chine for impressing his name and that of his product on  
the minds of progressive customers, for keeping in close,  
constant touch with old customers for removing prejudice  
against his product, for creating interest and making favor-  
able opinions—a machine whose finished product is a desire  
to buy, as expressed in an injury; a mind prepared to re-  
ceive the Salesman's arguments, or an order."

Did you send in your one dollar for the Clay Record as  
we asked you last month? If so, we thank you, otherwise  
send it now. It will come in just as handy now as then. The  
more the merrier. We will return to you its value ten fold.

## PAVING BRICK DEMAND GOOD

The annual report of the secretary of the National Pav-  
ing Brick Manufacturers' association, shows that the mem-  
bers of the association furnished 4,250,396 square yards of  
paving brick pavement during 1907, which is equivalent to  
a street 27 feet wide and 268 miles long.

During the first two months of 1908, 216,341 square  
yards of brick pavement were let or nearly 14 miles, not-  
withstanding the winter season when paving matters are not  
begun in most cities.

## BUILDING OPERATIONS FOR MARCH

Building operations in forty-seven leading buildings cen-  
ters throughout the country, from official reports to The  
American Contractor, Chicago, show a loss of 36 per cent,  
as compared with March, 1907. The decrease in the aggre-  
gate being \$20,000,000, of which more than one-half, or  
\$11,307,972, is chargeable to Greater New York. Thirteen  
cities show a gain of from 4 to 402 per cent, while others  
show a loss of from 6 to 84 per cent. Compared with sev-  
eral years ago, the March statement makes a very favor-  
able showing, however, the past two years having brought  
the volume of building and construction to such proportions  
that probably considerable time will elapse before last year's  
figures will be duplicated. Even at the present figures, out-  
side of New York city, building operations are on a fair  
basis.

## THE CEMENT INDUSTRY IN 1907

The advance statement given below has been prepared for  
the press and is issued in this form for the benefit of the  
producers, whose prompt returns have facilitated its com-  
pilation.

The following statement, issued by the United States  
Geological Survey, shows the total production of Portland,  
natural-rock, and puzzolan cements in the United States for  
the calendar year 1907.

This statement is issued in advance of the annual report  
on the production of hydraulic cement in the United States  
which is now in preparation, and is based on returns from  
all the active cement plants in this country.

The total production of all kinds of hydraulic cement in  
1907 was 52,230,342 barrels, valued at \$55,903,851.

Of the above total quantity of cement manufactured in  
1907 in the United States, 48,785,390 barrels were Portland  
cement, with a value of \$53,092,551; 2,887,700 barrels were  
natural-rock cement with a value of \$1,467,302; and 557,252  
were puzzolan cement with a value of \$443,998.

The total production of hydraulic cement in 1906 was 51,-  
000,445 barrels, valued at \$55,302,277. Comparison of these  
totals with those above given shows an increase in quantity  
in 1907 over 1906 of 1,229,897 barrels, and in value of  
\$501,574.

## OBITUARY

While mentally unbalanced, Charles B. Dare, a wealthy retired brick manufacturer of Glasgow, Ky., committed suicide by hanging.

Hon. T. W. Stanland, a retired brick manufacturer died at his home in Summerville, S. C., aged 66 years. He was the former senator of Dorchester county.

John Shephard, a pioneer and retired brick maker of Braddock, Pa., died at the home of his daughter in Tarentum, Pa. He was 76 years old and in 1860 built the first brick plant in Braddock.

Henry Brook, president of the Washington Brick, Lime and Manufacturing Company, Spokane, Wash., died at his home a few weeks ago. This is one of the largest firms in the Pacific coast states.

John R. True, vice president and treasurer of the Northwestern Terra Cotta Co., Chicago, died at his home 1825 Wellington Ave. He was born in Maine in 1853, and was a prominent lodge and club man.

Athur W. Kelly, of A. W. Kelly & Co., 116 S. 63rd Street, Chicago, died suddenly of stomach trouble. He was a dealer in common and pressed brick and the Chicago representative of the Curtis Brick Company, and well known to the trade.

Wm. H. Brush of Brush Brothers, Buffalo, N. Y., brick manufacturers died at the home of his son, of heart disease and other complications which have made him in poor health for a year. He was 64 years old and engaged in the brick business for 50 years.

### 1,200 MEN GET WORK AT 10 REOPENED BRICK YARDS

Increased activity in brick building operations caused the reopening of ten Chicago brick yards April 1st, and the employment of 1,200 brickmakers. The brick manufacturers have many orders ahead, they state, and predict that in a short time every yard in the county will resume operations.

### THE SCOTT COMPANY IN NEW OFFICE

*Mr. Geo. Hartwell, Editor, Plymouth Bldg., Chicago, Ill.*

DEAR MR. HARTWELL: We wish to announce in your next issue that we are now located in our new offices in the Third National Bank Bldg., and that we wish to extend a hearty invitation to our friends to visit us whenever they may come to St. Louis. If we do say it ourselves, we have obtained about the most comfortable suit in the building, and we will be disappointed if the arrangements we have made for visitors head-quarters are not taken advantage of.

We have a large reception hall, plenty of room where grips and suit cases can be left by visitors between trains or until accommodations are obtained at some hotel, a stenographer to take their letters, and last but not least, telephones, which won't cost a "nickel per."

The writer keeps a box of Cremos in his desk, so that if our acquaintances who may occasionally come to the St. Louis District "to take notes" will call on us, we will let them smoke with the positive guarantee that they will not be reported to the Smoke Abatement Committee.

Yours cordially,

SCOTT MANUFACTURING CO.,

St. Louis, Mo.

Wm. F. Scott, Pres.

## FIRES, ACCIDENTS, DAMAGES AND LOSSES

The plant of the Stonington (Miss.) Brick Company has been destroyed by fire causing a loss of \$7,000.

R. R. Beazley of Rockmore, Ga., has been appointed receiver of the Mansfield Brick Co., and will operate the plant. Mrs. Jesse Montgomery, has filed suit against an Albion, Ill. Brick works for \$5,000 damages for the death of her husband last fall.

The judge has signed an order at Towson, Md., restraining a sale of the property of the Peoples Brick Corporation at Lansdowne, Baltimore Co. Md. under mortgage foreclosure proceedings.

A fire at the plant of the Baltimore (Md.) Brick Co., Washington Road and B. & O. tracks partly destroyed office, carriage shed and residence. It is believed to be set fire by a firebug who has been arrested.

The Excelsior Pressed Brick Co., St. Louis, Mo., has been awarded damages to the amount of \$375,000 to be paid by the city for the taking of the land for the extension of Hunting Park and Torresdale Boulevard.

The Cincinnati (O.) Concrete Pressed Brick Co. has had a petition filed against it to throw it into bankruptcy. The company is capitalized at \$100,000, and the partitioning claim amounts to \$11,000 due to Edward Bridges.

A contest is being made over the claim of Receiver A. C. Roberts of the Montello Brick works, Reading, Pa., who asks \$5,000 for his services and \$4,000 for his counsel: The personal property of the company also has been sold.

Dr. Chas. B. Dotterer and Harry R. Leimbach, of Boyertown, Pa., who allege to have been swindled by purchasing brick stock of Dr. R. C. Flower have instituted suit against his bondsmen to recover on forfeited recognizance. Dr. Flower cannot be located.

The Blue Ridge Enameled Brick Co. Prudential Bldg. Newark, N. J. through the efforts of the banks have recovered more than one half of the concern's notes which were given to James M. Whelpley, an alleged swindler, to discount. He is in jail in New York.

### VOTE \$125,000 ADDITIONAL STOCK FOR IMPROVEMENTS

The stockholders of the Queen's Run Fire Brick company met in their office in Lock Haven, Pa., and voted an increase of \$125,000 of capital stock.

The money realized from the sale of this additional stock will be used to build a new fire brick plant on that company's ground at Queen's Run. This plant will be constructed on the most practical plan and will contain the latest improved machinery and appliances for the manufacture of all grades of fire brick. In addition to the brick plant the company will erect a number of dwelling houses which will also contain all modern improvement, electric light, steam heat, hot and cold water and bath.

The largely increasing demand for the Queen's Run brand of brick has compelled this old reliable company to make this move and their enterprise will not permit them to let the demand for their product get ahead of their production.

Work on the construction of plant, houses and railroad spurs will be commenced at once, the surveys and grades having already been made.

## CLAY RECORD.

### WILL WORK KAOLIN DEPOSITS IN UTAH

A company is to be formed to operate the kaolin deposits in Cedar valley west of Utah lake, and to establish in Salt Lake City, Utah, a large porcelain and enamel brick factory. The prime movers in the enterprise are Charles T. Hicks, president and general manager of the Hicks Clay company, of Drake, Ill., and Homer J. Kendall of the Zeb Kendall Brokerage company at Goldfield.

The promoters of the new company have recently secured control of the kaolin deposits referred to, and propose to make use of this form of clay in the manufacture of porcelain brick. In addition, the company will also ship and sell this clay to manufacturers of china products all over the world. The deposit in the Cedar valley is one of the four known deposits of kaolin in America. The other three are in Georgia, Florida and South Carolina. Mr. Hicks, who is an expert and a large clay shipper, says that the kaolin in Cedar valley is of much better quality than any found elsewhere in the United States and the equal of any in the world.

Kaolin is disintegrated feldspar and is extensively used in the manufacture of the finest of chinaware. The greatest quantity of the substance is found in China, although there are large deposits in France and England. It is of such a quality that it may be moulded into the thinnest of chinaware, such as the Haviland and Dresden ware, which is made from kaolin.

Some months ago the deposit in Cedar valley was discovered. It occupies nearly 1,500 acres of land hitherto considered worthless. Through the agency of Homer J. Kendall 540 acres of this land was purchased and options secured on 1,000 acres more. The matter was brought to the attention of Mr. Hicks and he came to Utah at once from Illinois. He looked over the ground and was delighted with the showing. He estimated that the deposits contain 20,000,000 tons of kaolin, which sells on the coast for \$16.50 a ton.

The availability of this bed of kaolin for use in the manufacture of porcelain and enamel brick occurred to Mr. Hicks, and after more investigation he concluded to establish a large factory in Salt Lake for the manufacture of this brick. He has planned to build a brick plant in Salt Lake at a cost of \$250,000 for the building and machinery.

### NEITHER TOPTICAL OR SKYSCRAPITIS

DEAR MR. HARTWELL: We wouldn't have you think for an instant that just because we have moved to the top floor of the Third National Bank Bldg., that we have grown toptical or that we have a bad case of skyscrapitis (which being interpreted means the same as toptical). On the other hand, we want you to publish this letter in the Clay Record so that all who read may know that one reason why we moved was to give us a little more room for entertaining our friends. We have a large reception room, lots of comfortable chairs, a stenographer at their service, telephones, which are without "the nickel in the slot attachment," and consequently their use is free. So when coming to St. Louis please bear in mind that the 18th floor of the Third National Bank Building is to be headquarters.

LUCE ENGINEERING CO.

### NEW FACTORY TO BE BUILT IN MILL CITY

At a meeting of the stockholders of the Red Wing (Minn.) Sewer Pipe company, at Red Wing, it was voted to authorize the erection of a new sewer pipe plant to be located in Minneapolis or between there and St. Paul.

The capacity of the company's two plants at Red Wing is not sufficient to supply the demand for sewer pipe, and recently some clay lands in Iowa have been secured to furnish the material for a new factory.

About \$300,000 will be expended on the new plant, and to furnish the working capital.

The clay can be shipped into Minneapolis at a lower rate than into Red Wing, which is the principal reason for locating the new factory here.

The clay used by the Red Wing sewer pipe plant consists of the strippings covering the clay which is used for pottery purposes.

The sewer pipe companies consume a great deal more clay in pottery than the stoneware companies.

In view of the fact that the stoneware clay would deteriorate if the top were stripped off the sewer pipe clay cannot be furnished faster than the stoneware clay is used. This has made it advisable to obtain other clay fields to supply the new factory.

Several years ago, when the two sewer pipe companies of Red Wing were consolidated, it was agreed that the former stockholders of each company should be represented in equal proportion.

There is no longer any need for such an arrangement, and the by-laws were ordered changed so that directors may be elected in the future without any reference to any of the former corporations.

Under the new arrangement the capital stock of the Red Wing Sewer Pipe company will be \$500,000.

### KINGSTON THINKS CATSKILL LABORERS SHOULD BE VACCINATED

The Kingston (N. Y.) Board of Health thinks that it would be advisable for every employe in the numerous brick-yards along the Hudson River to be vaccinated in case they have not received successful vaccination within three years. In Kingston not only has this step been taken but the Kingston board has sent copies of the resolution requiring the same to every board of health along the Hudson, including Catskill, hoping that similar action may be taken by this and other places.

But if the Catskill brick manufacturers take as little interest in the matter as did the Kingston manufacturers, among whom the movement started, there is little possibility of the vaccination being accomplished. When the Kingston Board of Health sent out a request for all the brick manufacturers to be present at a general conference, only one showed his face and then it was only after a long discussion that the resolution requiring the vaccination was passed.

The resolution follows:

"Resolved, That the several brick manufacturers be and they hereby are requested to require all employes upon their several brick yards or plants to be vaccinated on being so employed, or to be re-vaccinated in case they have not received successful vaccination within the past three years.

## INTERESTS ORGANIZE TO CARRY FIGHT TO INTERSTATE COMMISSION

A five-centered rate fight has developed in the brick industry and in it the railroads are so far victorious. The fire brick interests, paving brick interests, face brick interests and the interstate commerce commission are the other four principals.

Each one of the five is warring with each other. The wrangle follows complaint of the Stowe-Fuller Co. of Cleveland, over a year ago. The commerce commission in that case ruled that a "brick is a brick" the world over and should be so classified by railroad companies in their tariffs.

Railroads acted promptly. The firebrick rate was reduced from 25 cents per 100 to 22½ cents per 100 basis, Chicago to New York. The other bricks were raised from 20 cents per 100 to the 22½ cents.

Then the paving brick interests filed a complaint with the commission. In that strong protest was made. But later the Paving Brick Manufacturers' association filed an amended bill of complaint. It was this that stirred the face or building brick people.

As a result of that amended complaint it developed yesterday that the Ohio Face Brick Manufacturers' association has been organized. This organization already has fifteen Cleveland and Ohio concerns enrolled, controlling about 50 per cent. of the output of the face or building brick.

This association is to make complaint to the commission. It is understood that formal action in this line will be taken at once. The paving brick association suggests to the commission in its amended complaint that brick be classified as "packed" and "unpacked," the former to take the higher rate classification.

This is the particular thing that has kicked up the row between building and paving interests. Previously they had been on the outs with the fire brick people. Now each one of the brick interests is angry about something and peace conferences held this week have been unavailing.

What the commerce commission may decide to do under the circumstances is causing a good deal of speculation. It is not seen how that body can relieve any of the complainants unless it reverses itself. It may be that the case will have to be appealed to the United States supreme court.

Officers of the face brick association are: William H. Hunt, president; J. R. Charles, secretary, Cleveland; J. M. Adams, vice president, and L. G. Kilbourne, treasurer, both of Columbus.

## NO TEST LIKE TIME

Probably nowhere does the old adage "No test like time" hold good more strongly than it does with mortar colors. The "Red Brick" Brand manufactured by the Ricketson Mineral Paint Works, Milwaukee, has made good under this test to a remarkable degree. In the 20 years these colors have been on the market there is yet to be recorded a single case of crocking or fading. This excellence is due, first: to the remarkable purity of the ores used. Second: to the specially devised separators which extract all but the absolutely permanent oxide. Third: to the unusual fineness of the grinding. The absolute purity and great fineness of these colors makes them mix easier and go much farther than less carefully prepared brands.

## GOVERNOR TO ENGAGE IN BRICK MANUFACTURE

Governor Hanley, of Indiana, and Col. Fred Gemmer, the Governor's private secretary, are stockholders in the Indiana Clay Products Company, Indianapolis, for which articles of incorporation have been filed at the office of the Secretary of State. Colonel Gemmer is a director of the company. Other directors are Daniel Foley, an Indianapolis contractor; William E. Hayward, an Indianapolis capitalist; Amos B. Keepert, of the Keepert Line and Coal Company, and J. V. Zartman, secretary of the Indiana manufacturers and Shippers' Association. It is understood that Mr. Hayward will be the president of the company.

The Indiana Clay Products Company will manufacture brick and all other clay and earthen products. At the beginning the company will devote its time entirely to the manufacture of brick; later the manufacture of tiling will be taken up. The capital stock of the company is \$50,000, and it is understood that no stockholder has more than \$5,000 of the stock. The company's plant will be erected at Jasonville, Ind., where there is a large supply of clay suitable for the manufacture of brick. Work on the factory will be begun within the next few days. The chief officer in Indiana will be on the eight floor of the new Odd Fellows' building at Washington and Pennsylvania streets. Other stockholders aside from those already named are August Kuhn, J. E. McCullough, Asa M. New, C. H. Jones and F. E. Danner, all of Indianapolis; John Pynchon, of Chicago, and William P. Herron of Crawfordsville.

## 2,500,000 FIRE-PROOF BRICK IN ONE ORDER

What is said to be the largest single order for water-proof brick has been given to the Harbison-Walker Refractories Company, Pittsburg, Pa., by the Carnegie Technical schools. The brick are for the new addition, the foundations for which have been prepared. The work is to go on at once.

The order is for 2,500,000 to be delivered immediately. There are about 7,000 brick in an average car and it will require 257 cars to carry the order. The bricks are for the Applied Science building, which will add one more imposing structure to the group which is to comprise the quadrangle as planned by the architects, Palmer & Hornbostel.

## SUMMITVILLE TILE FACTORY TO BE BETTER THAN BEFORE

The management of the National Drain Tile company has decided to rebuild their entire plant at Summitville, Ind. The old plant that was not burned will be replaced by a large modern structure, 75x300 feet and four stories high, with engine and boiler rooms in a separate building. A gas producing plant will be installed. The kilns will be continuous so that one or more kilns can be emptied each day, making it, probably, the most complete and largest plant of its kind in existence.

The foundation for the large building is nearly completed. A large force of men have been constantly employed since the big fire and work will be pushed with all possible speed until completed.

## FAILS IN MATCH-MAKING SCHEME

Anybody desirous of marrying need go no farther than West Haverstraw, N. Y. There D. Farley, brick manufacturer, real estate agent, assessor, village trustee and hair amputator guarantees to find a mate for every lonely person. He has opened a matrimonial bureau and his charges are moderate considering the bunches of real happiness he promises to provide.

Recently Mr. Farley heard from a wealthy retired farmer of Valley Cottage, who is only known as George P—h—s, for newspaper purposes. He wanted a wife. Farley assured him that he could produce a charming girl and requested him to appear Thursday and be introduced to the future Mrs. P—h—s.

The Valley Cottage man appeared bright and early. He stood for a shave, shampoo and a good brushing and with beating heart awaited the arrival of the Huckleberry road train from Mt. Ivy at 11:25 o'clock. His bride elect arrived on time, which few women do, and Mr. P—h—s warmed up to her because she possessed the virtue of punctuality.

The fair maid, Miss H—s, for newspaper use, of course, first met Farley and informed him his description was all to the merry and urged an immediate meeting. The two were introduced and then the trouble began. According to the voracious writer in the Haverstraw Messenger this is what happened:

"I talk, said Mr. P—h—s, 'I wouldn't take you to a barn dance, by chowder.'"

Mr. Farley suggested that they enter an inner room and continue their negotiations. Thinking that his commission was fading from sight, he said that he thought a nearer acquaintance would mend matters. But Mr. P—h—s said that if this critter was a sample of Mr. Farley's choice of a wife, he wouldn't want him to buy or pick out a horse.

"Mr. P—h—s intends trying again and thinks he will meet his affinity at the next meeting. Miss H—s threatens suit on the grounds of breach of trust and a forty-cent carfare."

## JOHN KEIM FORESEES A BUSY SEASON

In anticipation of an early spring John Keim, the brick manufacturer at Danville, Pa., stated that by next week he expects to begin the manufacture of brick.

Owing to the new buildings going up at the hospital for the insane Mr. Keim foresees one of the busiest seasons that he has ever experienced and it is essential that he make an early start. He has a contract to furnish 1,200,000 brick to Mosier & Summers. In addition, he will no doubt be called upon to furnish the brick for the three remaining buildings at the hospital, the contract for the erection of which has not as yet been awarded.

Danville brick can be furnished to the contractors at the hospital cheaper than those shipped from a distance, where the item of freight is added to the cost. It seems reasonably certain, therefore, that a contract for all the brick needed for the new buildings will be awarded to the Danville manufacturer. Mr. Keim will operate each of his several brick-yards to their full capacity during the coming summer.

## CLAYS NEAR BELT, MONT.

An investigation of the clays in the vicinity of Belt, Mont., was made during the summer of 1907 by Mr. C. A. Fisher, one of the geologists of the United States Geological Survey, and a brief report on this work has just been issued as an advance chapter from the Survey's Bulletin No. 340, which forms Part I of "Contributions to Economic Geology, 1907."

Clay deposits of commercial value are found in many places throughout the Great Falls region, but those near Belt are apparently of exceptionally good quality. They are known locally as "flint" and "plastic" clays, but the term "flint" is not used in a technical sense, and the light tan-colored, highly siliceous rock to which it is applied is very unlike the typical flint clays of Pennsylvania. "Plastic" is used to designate a fine-grained, slate-colored plastic clay of good quality. The so-called flint clay was formerly used to some extent in the manufacture of brick, and the plastic clay is now shipped to Anaconda, Mont., where it is burned into refractory products used in the large smelters at that place.

Mr. Fisher's report discusses the geological occurrence of the clays and gives detailed descriptions of the mines. It also points out other localities where deposits of value may, possibly be found.

The completion of the Billings and Northern Railroad, which passes near some of the best deposits, will undoubtedly be followed by renewed activity and increased development of the clay resources of this district.

## THE MOUNT UNION SILICIA BRICK COMPANY WILL MOVE

The general sales office of the Mount Union Silicia Brick Company, which has been maintained in the Park Building, Pittsburgh, Pa., has been transferred to the works at Mount Union, Pa. W. H. Hill, who has been the general sales agent, is no longer connected with that company. This change in the personnel of the sales organization and in the location of the sales offices should not be construed to mean a reduction of the company's organization or efforts. It was made as a part of a policy of concentration and centralization, which policy, the company is confident, will also benefit its trade, as it places the entire responsibility of manufacture and distribution under the one central management.

The plant has been in successful operation for six years and during that period its product has grown in the esteem of all users. The sales have steadily increased, the plant has been enlarged and maintained on a thoroughly modern scale to permit an output sufficient to insure prompt shipments. The company carries at all times a large stock of regular sizes, together with the most generally used special shapes. When large orders of special shapes are required the company's facilities are such that it can make and ship the goods in the minimum time. All communications from this time should be sent to the Mount Union Silicia Brick Company at its general office and works, Mount Union, Pa.

## RECEIVE A LARGE CONTRACT FOR BRICK

The McEvoy Brick Works at Perkiomen Junction, Pa., have sufficient work to keep the plant running continuously until next August. The firm has orders for 3,000,000 brick, and they are being sent out as rapidly as manufactured.

**GET \$455,000 AWARD FROM CITY FOR LAND**

By the decision of Common Pleas Court No. 5, St. Louis, Mo., will have to pay damages amounting to \$455,000 to the Excelsior Pressed Brick Company and to the Elkins estate along Old York road for the land taken to build the Torresdale Boulevard and for the extension of Hunting Park. Of this amount, the brick company is to receive \$375,000.

These cases were tried without a jury, and the claim of the brick company was for 10.53 acres taken for the boulevard and 38.05 acres for the park. The Elkins claim was for 2.743 acres taken by the city for the boulevard. All the land was taken by the city September 15, 1905.

The brick company owned seventy-three acres of land on the east side of Old York road, between Hunting Park and Courtland street. The city took 48.58 acres from this tract. The portion of the tract retained by the company consists of small, triangular pieces of land. The Elkins estate contained 13.011 acres on the east side of Broad street, extending to the west side of Old York road and from Bristol to Courtland street.

Evidence at the trial consisted of the testimony of real estate experts, called both for the claimants and for the city, giving their opinions as to the value of the land before the condemnation, and of those portions of the land retained by the claimants after the city had taken its slice.

**BEGINNING WORK ON HUDSON RIVER BRICK YARDS**

Work began on many of the brickyards along the beach April 1st, and although it is too much to say that the season is expected to equal previous recent years, still there will be "something doing." At the yard of the Denning's Point Brick Company Michael Smith began operations with a gang of one hundred men. Nicholson Brothers, of Haverstraw, who leased and operated the Timoney brickyard last season, will operate the yard again this year. Mr. Shackett, of the brick manufacturing firm of Payne & Shackett, is to move on the Hunt property, just above Chelsea.

**BIG CONTRACT FOR THE ATLANTA TERRA COTTA COMPANY**

The Atlantic Terra Cotta Company, Tottenville, N. Y., in Broadway has secured the contract to furnish the glazed terra cotta to be used in Hudson terminal that is being built in New York City. The contract calls for 280 tons of this fine terra cotta, that is to be made at the local plant. The terra cotta used in the construction of the magnificent new Academy of Music in Brooklyn was manufactured at the works of local company. It is said to be the finest example of terra cotta manufactured in this country.

**FOREIGNERS BETTER THAN NEGROES**

To engage in work at the plant of the Charlotte (N. C.) Brick Company, on the Catawba river, a bunch of twenty-five foreigners, of various nationalities, arrived in the city and will leave for their destination. This company has been experimenting largely with this class of labor during the last two or three years and is highly pleased with its character. Negro labor has been rather unsatisfactory at this plant of late, and hence the contract with his foreign aggregation which in many respects is more dependable.

**SAND OR LIME BRICK OR BLOCK NEWS**

The Combination Brick Company of Detroit, Mich. has been incorporated with \$50,000 capital stock.

Plans are being made for a big concern at Bald Head, Ontario. It will be a \$35,000 sand-line brick plant.

The Cement Brick & Block Co. of Galva, Ills., has been incorporated with \$5,000 capital stock, by V. Z. Short, A. F. Deem and M. A. Adams.

The Denbigh, (N. D.) Brick Company has started their sand-line brick plant in operation and to meet the demands a night crew has been put on.

The property of the Milholland Pressed Brick Co., Marion, Ohio, at the Penn. Ry. & Silver St. has been sold to George Clark of Nelsonville, Ohio.

Ira Compton and Dr. Frizelle have leased the old Major Brick and Tile factory property at Dixon, Ills., and will make cement brick blocks and burial vaults.

Inquiry No. 2096 of the U. S. Consular Service, Washington, D. C., asks for particulars of processes and cost of machinery for a plant to make sand brick, pipes, etc.

Stock has been subscribed to the amount of \$20,000 for the building of a cement, brick and tile factory for Sheffield, Ia., near the Des Moines, Iowa Falls and Northern tracks.

The Rochester (N. Y.) Composite Brick Co., have completed their new factory to take place of the one destroyed by fire last summer. They can now make 15,000,000 brick per year.

The repairs on the buildings of the Fort Wayne, (Ind.) Pressed Brick Co's plant will be commenced at once and the building enlarged so as to be making brick within the next thirty days.

The 20th Century Tile Roofing Co., 614 West Lake St., Chicago, Ill. has been incorporated with \$5,000 capital stock. Incorporators are Charles H. Swing, Palmer D. Diamond and Samuel Topliff.

The Elmore (Minn.) Cement & Tile Co. has been incorporated with \$20,000 capital stock by C. F. Henke, J. F. Wentz, H. J. Meland, C. W. Ivery, Fred Sahr, S. H. Taylor, W. S. Drake, H. E. Stewart, A. M. Schanke and W. O. Dustin.

George A. Williard, Vine Street, Nashua, N. H., has started a brick making industry. He uses sand, cement and colors to make a sand cement brick. Should there be a good demand for them he will purchase machines to make 30,000 daily.

At a meeting of the directors of the Sugar Grove Brick Co. held in the Harrison Bldg., Columbus, Ohio, it was decided to start the plant to its full capacity of 50,000 brick per day. They have just doubled the capacity of the plant by adding another press.

The Pensauken Art Stone and Brick Co. has been organized with a capital stock of \$350,000 to take over the property of the Pensauken Brick Co. and complete the unfinished plant of the later company at West Palmyra, N. J. The incorporators are S. H. Howitz, T. D. Just, W. A. Leopold, J. Doran and J. E. Welch.

## MISCELLANEOUS ITEMS

The Kingsland (N. J.) Brick Co.'s plant was sold by the trustee, March 30th.

Pittsburg, Pa., capitalists are preparing to build another brick plant at Strasburg, Ohio.

The Gathmann Brick Co. Reinbeck, Ia. after making extensive repairs and improvements has started up for the season.

The Denison (La.) Brick Works, Green & Ward, props., have commenced operations and intend to keep up with the demand.

The Standard Drain Pipe Co., St. John's Quebec, have decided to rebuild their factory which was destroyed some months ago.

George Tilton is arranging to erect a large tile factory on the Patterson farm near Oak Harbor, Ohio, which he recently purchased.

The Queens Run Fire Brick Co., Lock Haven, Pa., have voted \$125,000 additional stock to build another fire brick plant at Queen's Run.

Did you ever look over the list of books that we offer for sale on pages 43, 45 and 49 and have you any of them? Some of them are valuable to you.

An effort is being made to start up the brick works at Arcadia, Kansas, several substantial brick buildings will be built in the town if it is accomplished.

The Gadsden (Ala.) Brick Co., are now making experiments with paving brick. It is believed that the clay recently found will make an excellent quality.

The Plasto Tile Co., Cincinnati, Ohio, has been incorporated with \$3,000 capital stock, by C. A. J. Walker, J. W. Sparrow, W. F. Landwehr, George Mathers and W. F. North.

The Bureau of Manufactures, Washington, D. C. have on file a series of articles from American Consuls on the possible trade in brick and roofing tile. Anyone can investigate them.

The York (Neb.) Brick and Tile Co. are putting in new stack and kilns and otherwise increasing the capacity of their works, as more building contracts are in sight than for years past.

The Olmstead-Thompson Mfg. Co., makers of plumbers' woodwork supplies, has acquired the terra cotta plant at Kensington, Ct., owned by the Donnelly Brick Co., and will use same for their factory.

The Northwestern Portland Cement Co. of San Francisco, Cal., has purchased the machinery for their 5,000 barrel capacity cement plant to be built at Kendall, Wash., and railway track is completed to the site.

The Eunice (La.) Pressed Brick Works, which is being erected south of town, between the Southern Pacific and the Frisco roads, is rapidly being completed. Theodore Savoy and Theodore Fuselier are the principal stockholders. Mr. Duroche is the manager.

The South Memphis (Tenn.) Brick Co., have filed an application to increase its capital stock from \$100,000 to \$150,000. The directors recently elected are Frank H. Reid, James F. Hueter, Paul Webb, W. C. Early, G. W. Mac Rea, B. L. Mallory and A. Baigalupo.

The Union Portland Cement Co., of Ogden, Utah, will build a town and erect a plant in Gallatin Co. Montana, midway between Helena and Butte. O. B. Gilson of Ogden is the assistant general manager. The plant will cost \$1,000,000 and manufacture 1,500 barrels daily.

The West Point (Ky.) Brick & Lumber Co., has been incorporated with \$5,000 capital stock.

George Husman has bought the Tallula, (Ill.) Brick, Tile and Electric Light plant and will operate same.

The Martin Brothers Tile Works, at Dunkirk, Ind will be ready for operation by the first of July, weather permitting.

The American Supply Co., Oscaloosa, Ia., have commenced building operations for their new enameled brick plant.

John H. Stroot of Quincy, Ills., is building down draft kilns and will install a Reichelt & Company Rotary press, stiff mud brick and tile machine.

Work has been started at the Mogadore (O.) Stoneware Co's plant. The company will make its own electric light and furnish light to the village.

George Bowen of Strasburg, Ohio, has secured leases on 600 acres of clay land and it is said a company will be organized by Pittsburg capitalists to build a large plant.

The Fort Pierre (S. Dak.) Brick Co. are now turning out dry pressed brick made from the Gunbo. Permanent kilns will be constructed soon as brick can be manufactured for them.

The Harbison-Walker Refractories Co. Pittsburgh, Pa. has been awarded contract for 2,500,000 fire brick for the Carnegie Technical School. Immediate delivery will be made.

A charter has been issued to the Cumberland Brick Co., Dunn, N. C. with \$50,000 capital stock. The incorporators are Jenkins Davis, S. Z. Stephens, and E. F. and A. F. Young.

The Redwing (Minn.) Sewer Pipe Co. directors have authorized the erection of another sewerpipe works to be built at a point not yet decided. \$300,000 will be expended on same.

Mr. Vansgen of Farmington, Ia. has installed a rotary press, stiff mud brick and tile machine made by Reichelt & Co. of Fort Madison, Ia. and will start work the middle of the month.

W. A. Lander of Moscow, Idaho, has sold his brick making machinery and land to Theodore Graham of California, who will move the machines and manufacture brick for the Administration Building of the University. 1,500,000 will be used.

The Arkansas Brick & Manufacturing Co., Little Rock, Ark., have purchased machinery so as to manufacture paving brick. They will turn out 60,000 daily, W. W. Dickinson, the president has made a very exhaustive study of the clay and conditions.

W. H. Cole and C. O. Thompson, well known Leadville, Colo. business men have bought 240 acres of clay land near Crane's Park, six miles north of Leadville and will either organize a stock company or develop the deposit themselves. Fine samples of brick have already been made.

The Chamber of Commerce of Tacoma, Wash., is anxious to establish a brick yard near Tacoma and will lend every possible assistance in effecting its establishment. A deposit of fine quality brick clay lies within a short distance of the city only a few hundred yards from a railroad.

Fritz Korf has bought land one-half mile south of Rosebud, Mo., on which he will start a brick yard.

The management of the National Drain Tile Co. have decided to rebuild their entire plant at Summitville, Ind., which recently burned.

Howard W. Hall has resigned as secretary and treasurer of the Superior Brick Co., Rockford, Ills., and E. Ward Baker has been elected to fill the place.

R. A. Brown & Sons are installing machinery at Concord, N. C. capable of turning out 75,000 brick daily, increasing their total output to 75,000 brick daily.

A big tile and sewer pipe factory is one of the early probabilities for El Reno, Okla. Negotiations are now in progress with a big concern from the northern states.

A. S. Paine, Superintendent of the New England Brick Co. of Boston, Mass., has purchased 8,000 cords of wood to be used in the New Hampshire plants of the company.

The contract for this building of the Glen Gery Brick & Cement Co's plant at Shoemakersville, Pa., has been let to Charles Schlegel who now has twenty men on the job.

The Tulsa (Okla.) Portland Cement Co., has been organized with \$300,000 capital stock. The company will build a 2,000 barrel cement plant near Tulsa, which will employ 250 men.

R. F. Bowers who has been the manager of the Thornton (W. Va.) Fire Brick Co., has resigned and gone to Lock Haven, Pa., where he will take the management of another company.

On option has been secured on the Warren Clark farm at Mason City, Ia., which lies just west of the Mason City Brick and Tile works, with a view of building the eighth tile works at that place.

Frank Magnuson and John Hadine of Twin Valley, Minn. have bought 40 acres of clay land from O. H. Fooshaug and will build a brick making plant soon as the frost gets out of the ground.

The Charlotte (N. C.) Brick Co. has engaged a bunch of twenty-five foreigners to work in their brick yard instead of the negro labor which has been rather unsatisfactory and not dependable.

The J. V. Rose Fire Brick works, Sharon, Pa., whose works are near Masury, O., will be started up giving employment to 100 hands. The plant has been idle a year, but prospects are good for a steady run says president Ross.

The Bloomingdale (Ind.) Clay Co., has been incorporated with \$50,000 capital stock. Directors are Arthur H. Zimmerman of Brazil, and John H. Dailey, Morton H. Hidden Otto C. Horning and August L. Teller of Terre Haute.

The Hollow Brick & Tile Co., Curtice, Ohio has been organized and will take over the large plant at Curtice and plan additions and improvements. Incorporators are Geo. H. Jay, Herman Bunte, C. W. Webber, G. Ackerman and O. K. Cranstorm.

The Indiana Clay Products Co. will build a plant at Jasonville, Ind., capital stock \$50,000. Directors of company are Gov. Hanley, Col. Fred Gemmer, Daniel Foley, Wm. E. Hayward, Amos B. Keppert and J. V. Zartman, Wm. E. Hayward is president. Home office in Indianapolis.

The new brick machines having arrived and are being set up at the Ashaway (R. I.) Brick Co's plant so that the plant will soon be running regularly.

The Waynesburg (Pa.) Brick & Stone Co. have awarded contracts to build kilns at their Smith Creek plant so that they can make paving brick.

M. E. Jacobs, Berlin, Ct., is installing a clay conveyor to convey clay from the bank to the machine, and will then start up the yard for the season.

The Pocatello (Idaho) Pressed Brick & Manufacturing Co. has the concrete foundations in to receive the machinery which is on the way from the factory.

The Wassell Brick Co., Glouster, Ohio, has been incorporated with \$50,000 capital stock, by E. A. R. Z., W. E. and S. H. Lewis and W. B. Gallager.

The Calaveras (Texas) Brick & Tile Co., are preparing to put in additional machinery and are now running overtime in order to keep up with the demand for their product.

I. H. Chapman of Goshen, Ind., and D. C. Morton of Kansas City, Mo., will establish a brick making plant at Quinlan, Okla., where they have found red-burning clay deposits.

The Brant Portland Cement Co., Brantford, Ont., has been incorporated with \$500,000 capital stock. The directors are T. Elliott and W. C. Boddy, of Brantford and J. H. Fisher of Paris, Ont.

Burgess Abbott, foreman for the York Harbor (Maine) Brick Co. has removed to Massachusetts to take charge of a plant and Wm. Bone former Superintendent of the Norton yard will succeed him.

## DIRECT HEAT

# DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**  
62-64 William St. NEW YORK CITY



## CLAY RECORD.

## WANTED

Superintendents brick manufacturing plant; estimator fire-proofing; salesmen brick and sewer pipe; salesmen, terra cotta; bookkeeper; estimator; brick and tile secretary to manager; salaries, \$1,500 to \$4,000. Other positions in all 12 offices open. Write H. A. P. O. S. 305 Broadway, New York, or 1005 Hartford Bldg., Chicago.

## FOR SALE

One power Repra, in number one condition, used only but a short time, capacity 1000 per day. Ask for full particulars.

American Enamelled Brick & Tile Co.  
1 Madison Ave. New York

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 25 combined brick machines, with repair parts sufficient to make machine first class. Capacity 550 in 1000 per hour. Greatest bargain. Write for particulars. GREAT EASTERN CLAY CO.  
30 Cortland St., New York.

## FOR SALE

Three two-press Whittaker pressed machines. Each machine is complete with counter shaft and ready to run. Condition good.

One single press Whittaker machine, all complete and ready to run. These machines are for making pressed brick. Condition good. Special prices.  
6,500 soft pine pallets, each 30 inches long, 9 inches wide and 1 1/2 inch deep. Four pick of these pallets for six cents apiece P. O. B. cars.

We also have several engines and boilers, heaters, pumps, and connections.  
THE COLUMBIAN BRICK & TILE CO.  
304-306 Brunson Bldg., Columbus, Ohio.

## WANTED

We want to find a market for a large deposit of klinker. We have other valuable clay for quenchware, pottery, terra cotta and high class brick.

Address, 11411st St. Astoria, Oregon.

## WANTED

We want to buy at once a large building of some kind and which we can utilize for drying sheds for drain tile. Give us full description of building, what it has been used for and best cash price as well as location in first best brick-making and want definite reply.

The Consolidated Brick and Brick Mfg. Co.  
Rising Sun, Ohio

## BRICK PLANT FOR SALE

Containing about 40 acres of best clay without top soil, perfect drainage, situated midway between Baltimore & Washington with necessary railroad facilities. Plant was partly destroyed by fire. Two stiff mud machines, new steam plant, 35 ton boiler, hot air drier with 30 steel cans, trackage and kilns remaining intact. Large house containing 8 rooms for superintendent. Purchaser could make this a modern fully equipped two machine plant for a little money.

Address G. A. B.  
Clay Record, 30 Dearborn St., Chicago, Illinois

## WANTED

A practical brick burner, waste, wages, experience to the  
Kason Brick Co., Ltd.  
Vermillion, Alta., Can.

## WANTED

Position as Superintendent or foreman of soft or stiff mud plant. Thoroughly understood the burning in all business and kilns, also the handling of men, and all classes of machinery, best references.

Address, C. M. Carey Clay Record, Chicago, Ill.

## FOR SALE

One Two Model Simpson Dry Press Brick Machine. One 5 ft. Iron Press Dry Press Brick Machine. One No. 6 Brewer Combustion Brick & Tile Machine with all necessary dies and cutters.  
One Clay Integrator.  
One Clay Elevator.

O. W. DUNLAP  
Bloomington, Ill.

## WANTED

By Large Clay Working Machinery Manufacturer a man thoroughly conversant with clay working, and also experienced in office work for sales department. In replying state experience, salary expected, and give reference. No one but first class man need apply. Address "K" care this paper.

## POSITION WANTED

Young man desires a position as Superintendent or manager of brick manufacturing, stiff mud and dry press process. Has traveled extensively.  
T. H. VALLER, care Clay Record, Chicago, Ill.

## WANTED

To buy or lease brick plant. One making mixed or gray face brick, or dry brick preferred. Or would buy interest in and take management of company. Address.  
A. M. Carey Clay Record, Chicago, Ill.

## FOR SALE.



Light and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.  
Cleveland, Ohio

## FOR SALE

Drain Tile and Brick Plant, including sheds and Kilns and 55 acres of land underlain with limestone. Or will sell machinery consisting of one 40 horse power boiler, one 30 horse power engine, one 10 ft. 40 horse machine with dies to 12 inch, one Raymond Disintegrator, one 100 horse Automatic Tile Table, one side-cut Brick Table and dies, one elevator, Carriage Trucks, Wheelbarrows, etc.

Malton & Long  
Xenia, Ohio

## FOR SALE CHEAP

An R. M. Press Combination Brick and Tile Machine No. C-2 cost \$2000 new; guaranteed. All dies 3/16 to 1 1/2 inch included. Also Brick and hollow block dies.

Address, RADFIELD BRICK AND TILE WORKS, Keokuk, Iowa.

## BRICK AND TILE PLANT

## FOR SALE

At Carthage, Ill. Hercules soft mud brick machine; 8 S. B. Madison & Co. machine for making tile and stiff mud brick, machine for engine and mill in good repair; 35 H.P. engine and 50 H.P. boiler, new address.

W. E. LYON & CO., Carthage, Ill.

## POSITION WANTED

Position by experienced and practical brickmaker as superintendent of a stiff mud or dry-press brick plant. Experience in burning brick and care of kilns and machinery. Address.

W. B. Carey Clay Record, Chicago, Illinois

## FOR SALE

One Kolls Brick Machine. One No. 1 Disintegrator. One 100 horse power steam engine. One 100 horse power cutting table. Wallace Co. make. One 40 horse power Gasoline Engine. Twenty-five Bricks Moulds. All in good condition. Address

W. H. Vander Hayden  
Ionia, Mich.

## FOR SALE

One Hercules brick machine, Horison Mfg. Co. make, capacity 40,000 per day, also mould winder for same; 50 good moulds, machine has only made 2 million brick. Brick shade, racks and pallets to hold 100,000 brick, a good brick truck. Good reason for selling. Address.

L. B. Carey Clay Record, Chicago, Ill.

FOR SALE CHEAP—New and re-laying rails, 12 lb. 30 and 40 pound. For prices, address  
ATLAS CAR & MFG. CO., Cleveland, Ohio

## WANTED

A position as a brick burner in a Dry Press or Paving brick yard. Have had much experience and can show good reference. Address, A. E., 202 3rd Ave.  
Rock Island, Ill.

## CASH FOR YOUR BUSINESS OR REAL ESTATE

If you want to sell me full description and price. Confidential. Established in 1861. I bring buyer and seller together. If you want to buy, sell or exchange any kind of business or real estate anywhere at any price, address

FRANK P. CLEVELAND,  
1725 Adams Express Bldg., Chicago, Ill.



For better made, ask for  
4 and 8 ft. 10  
1 Wheel, \$3.00  
2 Wheel, \$3.25  
3 Wheel, \$3.50  
4 Wheel, \$3.75  
Sold by all dealers  
BATTLE CREEK, MICH.

## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT.  
Care Clay Record, Chicago, Ill.

## PLANT FOR SALE

Very valuable Brick and Tile property on James River, Va., complete stiff mud plant, 25 thousand capacity, practically new. Iron soft mud self-drying, including steam drier, 50 thousand capacity; automatic conveyors, new and commodious dwellings. Not a better equipped plant in the state. 30 acres or more plastic red clay, admirable for brick and drain tile. Rapidly growing cities furnish market for bricks net \$7.00 at kiln. Practical monopoly of best market in U. S. for drain tile to net \$5.00 per thousand for 4 inches. Immense demand and no factory in 200 miles. Cheap fuel and labor, can operate with steam drier year round. Improvements have cost \$10,000 but I am not a brick-maker and to the right party will sell low and easy payment.  
W. L. JONES,  
Lock Box 5, Williamsburg, Va.

## FOR SALE

Boiler 36 inches, 3 inches, 15 feet long by 66 inches horizontal.  
2 Steam Gear Tempering Wheels, complete.  
1 Parts Disintegrator, 3 inch rolls  
1 American Clay Manufacturing Co. Brick side Cutter, 12 bricks.  
1 American Single Die Steam Repra 15 ft. daily.  
1 J. C. Steele & Sons Brick Machine, Automatic 30 ft. 30 ft.  
1 American Clay Mfg. Co. No. 10 Brick Machine, Automatic Rotary 20 ft. Side Cutter or End Cut 18 inch, capacity 100 M. brick per day.  
1 Chambers Automatic End Cutting Machine, 30 ft.  
1 Chambers Automatic End Cutting Machine, 30 ft.  
1 Richardson Double Tile Repra, made by Ohio Cement and to the right party will sell low and easy payment.  
1 Martin Drag Belt Conveyor, 35 feet long, 18 inch belt.

1 Clay Bank Cars  
12 Sets Cars Harnesses  
12 Trunks  
1 30 horse power Solid Valve Engine.  
1 Rider-Zinckson Hot Air Pump.  
1 Yard Roller  
1 Davidson Pump, 2 inch discharge.  
Address, S. W. Jones, Williamsburg, Va.  
CARE OF CLAY RECORD, Chicago, Illinois

## WANTED

A traveling representative to sell Fire and Face brick. Address  
Face Brick care Clay Record, Chicago, Ill.

## FOR SALE

Have 50 acres of fine clay land. Railroad running through it. Adjoints city limits. No brick works within 10 miles. Brick reliable at 18 cents. Good business. Would like to communicate with someone interested in starting a brick plant. Address  
T. H. Cox,  
Chamblain, S. Dak.

## FOR SALE

One No. 2 Porta B. Co. Clay Integrator. Used only six months. Address  
C. S. LIPSBERG SONS  
Aurora, Illinois

## SHALE CLAY FOR SALE

Have bed of red, ochraceous and blue shales exposed full length of 3,500-foot railway cut and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow brick, brick, paving block, tile, sewer pipe, on river. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Des Moines Railway Co.  
Des Moines, Iowa.



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## REPORT OF THE TWENTY-SEVENTH ANNUAL MEETING OF THE IOWA BRICK AND TILE ASSOCIATION

### THIRD SESSION

President Brecht called the meeting to order at 1.30 p. m. in the banquet hall at the Savoy Hotel in Des Moines for the third and last session, and said:

I am sorry that it is necessary for me to announce that Mr. Wylie, Commissioner of the Greater Des Moines Committee, who was to talk to us on the freight question, is unable to be with us. He has been detained in Washington on important business. It will therefore be necessary to pass to the next item on the program. If we find later on that we have some spare time, we will take up this freight question.

The next subject is, "Producer Gas for Power; Comparative Cost and Economy in Operation in Power Plants of 75 to 500 H. P." I have the pleasure of introducing to you Prof. M. F. Cleghorn of Ames, Iowa.

### PRODUCER GAS FOR POWER

Comparative Cost and Economy in Operation in Power Plants of Seventy-five to Five Hundred Horse Power.

When I was asked to consider this topic, the subject assigned me was simply that of Producer Gas Power. That subject alone would be very broad and could not be covered in fifteen minutes, and I doubt if in fifteen hours; so that in thinking over the matter I decided the best thing to do was to give a general discussion on the subject of gas power, going into the details at those places which seemed to be of the most interest. This paper, then, will be a general consideration of the subject of Producer Gas Power. The members of this convention ought to be interested in any form of power that is more economical than the ordinary steam or electrical power as we have it today, because you all are vitally interested in the amount of power that it takes to operate your brick and tile manufactures.

In this strenuous age of industrial activity when we are drawing so heavily on the stock of fuel that Mother Earth has been storing up during the past ages, it is no wonder that the problem of higher fuel economy should demand solution.

Ever since the time when Watt invented the steam engine, men have been striving to perfect it, and they have succeeded to a marked degree, but they have about reached the limit beyond which it is impossible for them to go.

It is not surprising then to see that engineers are turning their attention to an apparatus which bids fair to outstrip the

steam engine in low fuel consumption and in high thermal efficiency, viz., the gas producer and gas engine.

These internal combustion machines using gasoline or natural gas as a fuel are not new to any of us, but the gas producer, while twenty or thirty years old in Germany, is a comparatively new thing in this country, and a very new thing to some people who are not directly interested in engineering lines.

There are several gases which have been used heretofore and are used now in internal combustion engines with good results. These are natural gas, illuminating gas, producer gas and blast furnace gas.

Natural gas as the name implies, is formed by nature and taken from the earth by means of drilled wells. It is a rich gas and contains about 1000 heat units per cubic foot. It is a good fuel for gas engines. Illuminating gas, such as we have in our cities, contains about 500 heat units per cubic foot, but its high cost and the high per cent of hydrogen which it contains bars it from gas engine work except for small power.

Producer gas is the gas resulting from the passage of air and steam through a thick bed of burning fuel. This gas is weak and contains only about 140 heat units per cubic foot, yet it is a fine fuel for the gas engine.

Blast furnace gas is that which issues from the blast furnaces in our iron and steel plants. It is a very weak gas and contains about 100 heat units to the cubic foot, but it makes a good gas engine fuel if properly cleaned.

Producer gas has several advantages over natural gas or illuminating gas—1st, it is cheaper than the other two, i. e., more heat units can be produced in producer gas than in natural gas for the same money if the natural gas be purchased from a gas company; and, higher efficiency can be obtained in the engine cylinder with producer gas than with illuminating gas for this reason: the efficiency in a gas engine cylinder increases with the increase of compression in the charge at the time of ignition, other things being equal. Now, illuminating gas contains quite a large per cent of hydrogen which will not stand a very sudden compression without igniting itself. Consequently, to insure best running the compression is not carried above 100 pounds per square inch, while in the use of gas producer gas the compression may be carried as high as 160 or 175 pounds per square inch. The consequent gain is evident.

But perhaps the greatest advantage of producer gas over natural gas, to those who are not in a natural gas region, is the fact that it can be obtained at any place where coal can be obtained.

## CLAY RECORD.

As illuminating gas is expensive and natural gas cannot be obtained in this section, we shall probably be interested only in the producer gas side of the question. This paper, will, therefore, deal only with producer gas and producer gas apparatus, and its comparison with steam.

As defined above, producer gas is the gas resulting from the passage of air and steam through a thick bed of burning fuel. Air is composed principally of oxygen and nitrogen not chemically combined. The oxygen of the air coming into contact with the heated fuel combines with it and forms carbon dioxide ( $\text{CO}_2$ ), or one part carbon to two parts oxygen. This we call complete combustion, and generates heat which keeps the fire going. As the  $\text{CO}_2$  passes up through the incandescent fuel the oxygen of the air supplied becomes exhausted, and the  $\text{CO}_2$  gives up one part of oxygen to another part carbon forming two parts of carbon monoxide ( $\text{CO}$ ). The formation of  $\text{CO}$  we call incomplete combustion, as it represents carbon only partly burned. As it is impossible to reduce all the  $\text{CO}_2$  to  $\text{CO}$ , a small per cent of the  $\text{CO}_2$  will pass out with the other gases.

The nitrogen of the air is an inert gas, hence passes through the fire unchanged. The steam being composed of a chemical combination of hydrogen and oxygen is decomposed when it reaches the high temperature in the fire, the oxygen then combines with the carbon to form  $\text{CO}$  and the hydrogen passes on in a free state.

We thus find in producer gas the following constituents: carbon dioxide, carbon monoxide, nitrogen and hydrogen. We also find a certain per cent of marsh gas, or coal gas, which is driven off when the coal is first heated. The nitrogen and carbon dioxide are objectionable in that they will not burn, hence they increase the volume of the gas without at the same time adding heat to it.

There are two reasons for furnishing steam to a producer—1st, the steam hinders the formation of clinkers; second, it furnishes oxygen without increasing the proportion of nitrogen.

There are three general types of producers, indicated as pressure producers, suction producers and a third which is a combination of the first two. All of these types consist primarily of an air tight fire pot with grate in the bottom and a double covered opening at the top through which the coal to be gasified is allowed to pass without at the same time admitting a large quantity of air.

In the pressure producer the air and steam are forced through the fire by means of a fan blower or steam jet. In this type the gas is rather variable in quality and a large storage tank is needed from which the gas is forced to the engine.

In the suction type of the producer, the air and steam are drawn through the fire by means of the suction created by the engine as it draws in a charge of gas. With this producer no gas storage tank is needed.

If the pressure producer is operated by means of a steam jet a separate boiler is needed for generating the steam, while in the suction producer all the steam that is needed is generated in a water jacket or a small heater and the heat required is obtained from the hot gas as it leaves the producer.

All producer gas before passing to the engine must pass through purifying and cleaning apparatus to remove all dust and tar which comes from the coal. Tar is very prevalent in soft coal, and is very difficult to remove from the gas. It requires complicated centrifugal action separators, hence complicates the producer very materially. Where hard coal is used, as it is in all suction producers, the gas is quite free from tar, hence needs only to have the dust removed. This is accomplished by having the gas pass through a vessel, or scrubber, as it is called, filled with coke, over which a jet of water is sprayed.

The pressure producer will handle almost any kind of coal that does not clinker or cake badly; while the suction producer will handle only hard coal, coke, or charcoal.

From the above discussion it is plain to be seen that the suction producer is the more simple and the cheaper to install, although it will handle only the higher grade fuels.

In attempting to simplify the soft coal producers by eliminating the tax extractors, the experiment has been tried of passing the gas containing the tar through a very hot fire, and thus changing the tar into fixed gases which will not condense when the temperature is reduced. This experiment has given good results, and it not only eliminates the tar but it adds considerable heating value to the gas. In applying the above scheme, several methods are used. One is to have two producers and pass the gas from one through the hot fire of the other, reversing the process every few minutes. Another is to take the air and steam in at the top of the producer and the gas out of the producer under the fire, thus forming what is termed a down draft producer. Some free carbon lamp black is liberated in this process, and must be taken out in the scrubber. It is my opinion that this scheme will ultimately displace the troublesome tar extractors that are on the market today.

There are many advantages which the gas producer has over the steam boiler. The steam boiler has an efficiency of from 40 to 60 per cent, while the producer efficiency is between 65 and 85 per cent. The gas producer using as it does less coal than the steam boiler means less ash and consequently a smaller labor and coal item in the expense account. Pressure producers will use a grade of coal which could not be used satisfactorily in steam boilers.

The auxiliary apparatus in the case of a suction producer is very meager compared to that of a steam boiler. With producers there is no high pressure carried as with steam and as the gas will not explode unless mixed with air the danger would seem to be much less. One fact that may be of interest to those in Des Moines who have been lamenting over the smoke nuisance is that the gas producer gives off no smoke, hence needs no unsightly chimney to belch soot and dirt out over the well groomed passerby. I would suggest the producer as one means of reducing the smoke evil in those places where power is being generated.

While the gas producer generates clean gas with a fair degree of success it should not be said that it is as near perfect as the gas engine which it operates. The gas engine of today can be depended upon if it is furnished with a sufficient quantity of good gas.

The design of the natural gas and gasoline engine in this country has been pushed ahead faster than has the producer due, no doubt, to the comparatively low price of fuel. The first exploding engine was invented in the Seventeenth Century and was designed to use a sort of gunpowder. But the first really practical gas engine was built about 1840. From that time to this the advance has been remarkable. Engines are now built in size from one horse power to 3000 horse power and these larger ones are not few in number either. Some of us may have the idea that a gas engine must always be a high speed engine and that it must be noisy. This is not to the case. With the larger engines it is impossible to tell by the sound whether the engine is steam or gas, and as for the speed, it may be as low as eighty-five revolutions per minute or even less than this.

The gas as it reaches the engine is mixed with a certain per cent of air. The mixture, being explosive, is passed to the engine cylinder where it is ignited. Right here I wish to state that the idea that the richest gas gives the best results in the engine is wrong for the reason that all gas must be mixed with air before it will burn at all, and the richest gas simply takes more air to reduce it to a point where it will

burn, thus pulling the rich gas down to the same plane as the weaker gas. Thus natural gas must be mixed with eight or ten times its own volume of air, while producer gas only requires one or one and one-half times its own volume. And it is very essential that this mixture be just exactly right. This mixture is regulated by valves on the gas and air pipes, these being adjusted by trial until the engine is running satisfactorily. Should the mixture not be satisfactory to the good taste of the engine, it will either decide to go on a strike and quit running or will set up such a racket of back-firing that your neighbors will think you are holding a premature Fourth of July celebration, and will come over to help drink the refreshments. The gas engine is not backward about telling its troubles. The amount of mixture used is regulated by the governor automatically.

The speed variation in the early engines was very great, and they could not be used where absolutely steady running was required. The modern engines, however, are so nearly perfect in this respect that they can be used on alternating current generators which are working in parallel. This is a serious test for any engine.

That the foremost engineers of the country have faith in this form of power is proved by the fact that several large commercial plants depend entirely upon it.

The principal thing that attracts the attention of engineers is the economy of fuel obtained by this apparatus. The average non-condensing steam plant uses only from five to ten per cent of the useful energy of the coal, while a gas plant will utilize from eighteen to twenty-five per cent of that energy. Where a non-condensing steam plant requires ten or twelve pounds of coal per brake horse power hour, the same size gas producer plant will operate on from one to two pounds. This fact alone speaks volumes for the future success of the producer gas power.

The labor item is just about cut in two by the gas plant, while the oil, waste and repair item remains about the same or perhaps, a little more. The amount of water used by a gas plant is somewhat larger than that of a non-condensing steam plant, but considerably smaller than a condensing steam plant, unless a cooling tower is used so that the water may be used over again. Should cooling towers be used for the cooling of the condensing and jacket water, the amount of water used by either a condensing steam plant or a producer plant will be reduced to a very small quantity, indeed.

In the gas power plant, the large amount of water is used in the engine jackets and in the scrubber, while less than one pound per horse power hour is used in the producer for enriching the gas.

The first cost of a gas power plant complete is from forty to sixty per cent more than that of a steam plant of the same size.

Considerable discussion has arisen in the past as to the comparative value of the four cycle and two cycle engines. While the two cycle engines seemed at the beginning of the gas engine era to have the greater advantages, they have been overbalanced by the good points of the four cycle engines, and we find that the majority of the engines on the market today are of the four cycle type. In order to get a sufficient number of impulses per revolution with the four cycle engine, we must increase the number of cylinders or make them double acting. Both of these schemes are used.

There is one item in the case of the steam plant that is going to be an efficient shield in its combat with the gas producer power plant for supremacy in the engineering world. It is the item of exhaust heating. A large per cent of the heat in a steam engine exhaust may be utilized without difficulty for heating and thus reduce the efficiency of the combined apparatus to a low figure. It is admitted that

forty or fifty per cent of the heat that enters a gas engine is now lost in exhaust and water jacket water that might be used in heating, but to do this means complication and expense.

Mention has been made of the coal, water and efficiency items in the two plants, steam and gas. To bring this more fully to your notice a graphical representation is offered, shown as plate I. This plate shows the comparative values of the three items mentioned above. No cooling towers have been considered in computing the water consumption of the different plants. Should cooling towers be used the water consumption of the two gas plants would be little less than that of the condensing steam plant, and both would be greatly reduced from the values shown.

Plate II shows very clearly the initial cost per brake horse power of various plants. This cost includes the complete plant with the producers, engines, dynamos direct connected to engines, land and building for plant and also the price of a reserve unit to insure constant service.

While it must be admitted that the gas producer industry in this country is barely, if quite, out of the initial stage, yet the results thus far attained point toward a bright future. This apparatus, like any other, has its own peculiarities, and the operator must be fully acquainted with these if satisfactory operation is expected.

The President: I think it proper, gentlemen, that we move a vote of thanks to Prof. Cleghorn for his interesting talk.

Upon motion of Mr. Platt, duly seconded, a vote of thanks was tendered Prof. Cleghorn.

President Brecht: Are there any here who wish to discuss this paper? If not, we will take up the next subject. Through the courtesy of the engineering department of the Western Electric Co., Chicago, we have with us Mr. J. A. Seville, who will talk to us on "Electric Power; its Generation and Use in Clay Plants as a Means of Economy." I have the pleasure of introducing Mr. Seville.

#### ELECTRIC POWER

##### Its Generation and Use in Clay Plants as a Means of Economy.

Mr. Seville: Gentlemen of the Convention, the general object of this paper is to give you some idea of the possible saving that can be made in equipping a plant with electrical engineering machinery, and further to give you some idea of the methods of applying electric power to the machinery. In the paper I have embodied a description of a plant which will give you some idea of the methods used.

Although the art of clayworking is one of the oldest known to history, and even held an important place in the activities of uncivilized peoples, the methods employed in this industry have not been greatly improved until in comparatively recent years. However, the improvements that have been made in recent years, in clayworking machinery, have brought about truly remarkable results; and at the present time, the facilities of the up-to-date clayworking plant, like all other industrial plants, have reached such a degree of convenience and efficiency as would have been considered little short of unbelievable a few decades ago.

Processes that were performed slowly and laboriously by hand are now carried through with the greatest economy and convenience by means of power machinery. The utility of these machines is now generally recognized by all clayworkers, and hand processes are practically obsolete in all but the smaller, temporary plants.

With the introduction of such machinery in the clayworking plant came the problem of selecting an equipment to apply the power to this machinery. In clayworking the cost of the raw material is comparatively low. Moreover, the widespread deposits of the raw material makes it practically impossible to successfully regulate the selling prices by

merger. The cost of the finished product, therefore, depends almost entirely on the cost of manufacturing processes. Therefore, if the clayworker is to meet competition most successfully it is most essential that the most efficient and inexpensive methods of operating the machines used in clayworking be employed in his plant.

Consequently the fact that electric motor drive has proven to be the most efficient and economical method of machine drive in other classes of manufacture has caused the clayworker to look to this system for the proper solution of his power problems. The satisfactory results which have been obtained in every case in which electric motor drive has been adopted, indicates that it will be but a short time until this system of machine drive will replace all others in clayworking plants.

Let us consider briefly some of the more common applications of electric motors in the clayworking plant. The model plant would be equipped something as follows: The pumps used in supplying the water streams for loosening the soil would be motor driven; motor driven shovels would handle the raw material, and electrically operated tramways would transport the raw material from the mine to the manufacturing plant.

At the manufacturing plants the material would be ground in the motor driven dry pans, and carried from here to the motor driven pug mills by means of motor driven conveyors. The brick machines, cutters, represses, etc., would all be equipped with individual motors, permitting of absolute control of their operation with the greatest convenience. There would also be motor driven blowers to supply the air for heating and ventilating, drying the product and for forced draft in the kilns, a condition that permits of the use of rougher fuel than would otherwise be possible. Throughout the plant motor driven conveyors would furnish rapid and convenient transportation for the material.

To any one familiar with the operation of electric motors, the convenience and efficiency of such a plant is readily apparent. The use of motor driven apparatus at the mine eliminates the expense of transporting fuel to that point, as the electric power is economically transmitted from the central power house to any point in the plant, by a system of wires. This system also permits the power house to be located at a point that is most convenient for handling the coal and ash. The electric tram cars are convenient of control, require the minimum attention and afford a much more rapid means of transportation than is possible with cars drawn by horses or cables, so that one car electrically operated would take the place of several with the slower means of locomotion.

The flexibility of the system of individual electric motor drive is also of considerable value in the clay working plant. The motor takes very little more room than is usually required by the driving pulley used with a system of belt transmission. Each step of the manufacturing process may be located in such a way as to make possible the most rapid and economical transfer of the product from one department to the next in succession. Addition to or changes in the plant equipment can be quickly made without difficulty and expense involved when shafting has to be rearranged.

At the manufacturing plant proper we would find the greatest gain in economy and efficiency. With belt, or rope and shaft transmission of power there is a constant loss of power, due to the friction, belt slippage, etc. This amounts to from 30 per cent to 60 per cent of the output of the engine, and is practically the same whether all or only a part of the plant is in operation. With individual electric motor drive these large frictional losses are eliminated and only those machines in actual operation use any power; as soon as any machine is shut down the power expense for that

machine is stopped. With a system of belts and shaft transmission the maintenance expenses are high, and considerable annoyance is occasioned by shut downs due to broken belts or worn bearings. With the individual motor drive the only moving parts are the rotors of the motors, and as the remainder of the power transmission system consists merely of wires, it is practically free from depreciation expense.

The continuity of the manufacturing process is highly important in the clay working plant. With belt and line shafting, accident to any machine necessitates a large part of the plant being shut down. However, with electric motor drive, shut down of any machine does not interfere with any other; each machine being entirely self-contained.

With a mechanical system of drive, in case any machine becomes clogged, there is no provision for shutting off the power automatically; and as a result both the machine and the mechanism driving it are in danger of becoming injured. However, with electric motor drive, when any machine becomes dangerously clogged the circuit breakers or fuses in the motor circuit open automatically, shutting off the power and preventing any injury to the equipment. The absolute protection afforded by such apparatus and the perfection of the oiling devices of the electric motor makes a system of motor drive especially free from trouble of any sort, and a very little attention for the maintenance of the system is required.

Because of the large starting torque demanded by part of the apparatus used in clayworking, there is nearly always trouble experienced with belt slippage, when belt drive is used. If the belts are made tight to prevent this slippage there will be heating and wear in the bearings because of the excessive pressure; belt preparations being practically useless in the clayworking plant, because of the dust. However, with the direct geared motor this trouble is entirely eliminated, as the motors may be designed so as to obtain the exact characteristic required for driving each type of machine.

With motor drive, meters may be so arranged that the power used by any machine or department can be read directly from the switchboard. A study of such data often makes possible greatly increased economy in the cost of production. The importance of this data is quite generally recognized, and it may be interesting to note that the German Clay, Cement and Lime Manufacturers' Association has offered three prizes of 1,000, 500, and 250 marks for a contrivance that would give the power consumption of a machine with the old methods of drive. The following properties are required of the device:

1. It must be simple.
2. It must be of such nature that it can easily be connected with the machine without extensive preparations.
3. An appliance which can be transferred from one machine to another will be given preference; but this requirement is not indispensable.
4. The appliance must accurately indicate when and to what extent the power varies.
5. It is not absolutely necessary for the consumption of power to be represented in kilograms per minute. Such appliances will also be admitted, which only have conditional indications, such as tension indicators. The indications must, however, be such that they can be easily compared with each other.
6. The chief feature of the appliance is to consist in enabling the workman to know when the normal consumption of the power is not reached, or is exceeded, owing to the clay reaching the machine in too soft or too hard condition, or other irregularities.

You will readily see how nicely all these conditions can be met with electrical measuring instruments, in the plant equipped with electric motor drive.

Other important advantages obtained with electric motor drive are that lighting can be obtained from the same circuits that supply power for the motors, furnishing the plant with highly efficient, convenient and safe lighting equipment. By the use of the many valuable labor saving devices, such as the motor driven conveyor, etc., a much smaller number of workmen are required. All machines being entirely self contained, can be moved at will, and every machine can be so located as to give the greatest economy of floor space.

The exact type of the electrical equipment used in the clayworking plant will, of course, be largely determined by the operating conditions in each plant. In general it will be found that an alternating current system is best adapted for this service. The simplicity of the squirrel-cage induction motor makes it especially well adapted for the severe service met with in the clayworking plant. There are no sliding contacts and no parts that will be injured in any way by the dirt and dust encountered in this service; special dust proof bearings being used. The alternating current also possesses the advantage that the power may be transmitted at higher voltages in case there is any considerable distance between mine and manufacturing plant. By this means the efficiency of transmission is increased and the first cost of transmission line is greatly reduced.

The usual practice where squirrel-cage induction motors are used, is to start the motor with no load, the machine being started by means of a friction clutch. This system protects the clayworking machine from shock as well as permitting the motor to come up to speed unloaded.

Unless the plant is so located that electric power may be obtained at an exceptionally low cost, it will be found advisable to install a generating equipment for supplying the power. This arrangement will not only be the most economical in power cost, but also has all of the advantages of making the plant entirely independent of outside conditions.

As an example of a modern clayworking plant, electrically equipped, a brief description of the plant of the Columbus and Hocking Clay Construction Company which is located at Kachelmacher, Ohio, may prove of interest.

The Columbus and Hocking Clay Construction Company own 20,000 acres in Hocking Co., which contains both coal and clay, the coal forming the top strata.

This plant is being constructed for a capacity of 450,000 brick per day; the part now completed having a capacity of 160,000 brick per day. The power equipment is intended to furnish power for lighting and operating machinery in the coal mines as well as the brick manufacturing plant. The power plant equipment installed at the present time consists of three 350 kilowatt, three phase, 2,200 volt, 60 cycle, Western Electric Alternators; direct connected to 500 H. P. Snow, gas engines, running at 150 R. P. M. Power and lighting circuits are distributed throughout the plant by means of a six panel, Blue Vermont marble switchboard, built by the Western Electric Co.

The engines are operated on producer gas, coal for the producers being supplied by the deposits which cover the clay. These producers are of a new type and are constructed so as to consume the coal completely, a fine ash being the only product left.

The water supply for the plant is furnished from a large reservoir, located on the peak of a hill near the mill. This reservoir is about 200 feet above the level of the plant; and gives ample pressure for all purposes. The water is delivered to the reservoir by means of an electric-motor-driven pump of a capacity of 1000 gallons per minute.

The order of the various manufacturing processes as carried on at this plant is as follows: At the mine, which is about 1¼ miles from the mill, the clay is mined by means of an electrically operated mining machine. The clay is then

delivered to the crusher by means of electric cars of two tons capacity. The motor driven crusher reduces the clay to the size of a hickory nut, and has a capacity of about 90 tons per day. From the crusher the clay is driven into a chute which conveys the clay to the dry pans, where it is reduced to the powdered condition necessary for mixing. There are two dry pans, each being connected to a back geared individual motor.

From the dry pans the clay is elevated to bins, located above the pug mill, by means of a motor driven conveyor. The clay is steamed as it falls into the bin, and is allowed to lie in the bins twenty-four hours for amalgamation. The clay is then carried by another conveyor to the pug mill.

A Freese brick machine is located directly below the pug mill, so that after mixing the material can be allowed to drop directly into the brick machine.

The bricks are then cut to the proper length in a rotary cutter. Those bricks which are to be repressed are then delivered to a repress which has a capacity of 25,000 brick per day. The motor driving the repress also drives a line shaft from which the elevator and conveyors are operated.

From the repress and brick machine the brick are transported to the dryers on trucks drawn by a motor car. The dryers are heated by gas from 100 to 300 degrees Fahrenheit, and supplied with air by means of two motor driven fans; about twenty-four hours being allowed for the drying process.

From the dryer the trucks are again hauled into the kilns by the motor car. There are six down draft kilns of 160,000 bricks capacity each, and one Youngen Continuous kiln of sixteen chambers, each chamber having a capacity of 60,000 brick. The kilns are heated to a temperature of from 2,200 to 2,300 degrees Fahrenheit; from 8 to 10 days being required for burning and an equal time, of course, for cooling the brick.

All machines in the mill are operated by Western Electric alternating current motors of the SP and CS types. In addition to the apparatus in the brick mill and mine, the company also has a machine shop equipped with machines driven by individual electric motors.

The satisfactory results that have been obtained in these plants equipped with a system of motor drive speaks strongly for the value of such a system for clayworking. As we review the conditions that have controlled the clayworking industry in the past, and anticipate those that would seem to be of first importance in the near future, it is safe to predict that the most economical and convenient system of machine drive, as represented by the electric motor at present will not only be highly desirable but will soon be considered a necessity in the clay working plant.

President Brecht: This paper is now open for discussion.

The Secretary: We have here a letter that was received from Mr. Lippincott of the Keystone Clay Products Co. of Greensburg, Pa. Anticipating an interesting article on the question of electrically driven machinery by the Western Electric Co., I thought best to write these people and get a little of their practical experience, having noticed that they had installed this system. I asked them how they liked it and how it was proving as an economical power. He writes under date of January 18th:

C. B. Platt, Secretary, Iowa Brick & Tile Association, Van Meter, Iowa.

DEAR SIR:—In compliance with your request of the 15th, I herewith submit to you my views in regard to electrically driven clay machinery:

We are operating other plants with steam, but when we determined to build a plant here at Greensburg I investigated the different steam and electrically driven machinery over the middle west, and finally came to the conclusion to

equip our plant with direct driven machinery; that is, we have each piece of machinery connected directly with motor, using no line shaft, pulleys or belting whatever.

We have on our brick machine a 75-horse power motor; each pan 40; pug mills 40; large fan for dryer 15; and exhaust fan at other end of the dryer 5.

I have never regretted for one moment the installation of electricity as motive power. We are manufacturing, and have been for the past year, on an average of 30,000 brick per day at this plant. Our power bills covering everything have averaged about \$250 per month. In taking this in comparison with one of our other plants at Conaut, Ohio, where we drive with steam, we find that our coal bill alone for steaming purposes costs as much as our total power bill here; and find the electric end of it most satisfactory.

The items of repair have amounted to practically nothing, with the exception of one 40-horse power motor which was burned out, purely due to carelessness. I might say that \$500 would cover all repairs which we have been put to in the past year.

I enclose you copy of a letter from the Industrial Department of the Westinghouse Electric & Manufacturing Co., of Pittsburgh, Pa., who made a thorough investigation of our plants and workings, having several of their men on our plant for a number of days. This letter will give you better information from a technical standpoint than I could give you.

I hope that these few remarks will be of some assistance to our fellow-craft, and desire communications from any of them at any time, which I will be very glad to take up and answer, giving them what other information I can.

I also wish to add that as soon as our steam plants run down or nearly out of commission, we will change to electricity. I don't believe I could express myself any stronger than in this last remark.

I beg to remain,

Very truly yours,

KEYSTONE CLAY PRODUCTS COMPANY,  
E. P. Lippincott, General Manager.

September 19th, 1907.

Mr. E. P. Lippincott, Manager, Keystone Clay Products Co., Greensburg, Pa.

DEAR SIR:—I am sending you a few figures regarding the test which I made at our plant on September 5th and 6th which I thought might be interesting to you.

The test as a whole showed that the motors were working under very light load but when you increase the output from 30,000 to 60,000 bricks per day the load on the pug mill and auger will undoubtedly be increased to a better value. The load on the 40 H.-P. motor driving the dry pan varies from 22 to 25 H.-P. under average conditions and the maximum load obtainable by filling the pan so that the material fell over the edge was about 37 H.-P. These conditions are never experienced under actual work since the material was not pulverized and was returned from the screen in large quantities. The load on this motor will not be increased by an increase in the output of the plant, so it is believed that a 30 H.-P. motor would be satisfactory for this service under existing conditions.

The load on the 40 H.-P. motor driving the No. 51 pug mill is approximately 20 H.-P. and it seems that a 30 H.-P. motor would be of sufficient capacity for this mill when working under maximum output since the amount of material in the mill would be about the same in either case.

The 75 H.-P. motor on the No. 1 Giant Auger was operating a load from 24 to 33 H.-P. with an output of brick varying from 40 to 75 per minute a day and it is believed that a 50 H.-P. motor would be satisfactory for the work.

I found that both fans were consuming about 10 KW.

which is not a full load but it would not be of much advantage to supply smaller motors for this work.

By taking readings on the integrating wattmeter I was able to obtain a very good check on the individual tests of the three motors and the average load on these at present appears to be about 56 KW. and the light load of about 10 KW. gives a total of 66 KW. for daily output of 30,000 brick. This gives 2.2 KW. per 1,000 brick per day which with a motor efficiency of 87% would reduce to a motor installation of 2.56 motor H.-P. per 1,000 brick per day. With the addition of a new dry pan you will have a motor installation of 215 H.-P. and a capacity, I believe, of 60,000 brick per day, which will be 3.6 H.-P. per 1,000 brick per day. According to the tested value of 2.56 H.-P. your aggregate for the 60,000 plant should be about 155 H.-P. and this might be divided into the following motors:

2 dry pans .....	60 H.-P.
1 pug mill .....	30 H.-P.
1 auger .....	50 H.-P.
Fans .....	20 H.-P.

Total .....

This saving of 55 H.-P. in total capacity would represent approximately \$750.00 on the first cost of the plant and the motors would be operating under conditions of better power factor and more nearly full load. Perhaps a better average value of horsepower required per 1,000 brick per day could be obtained by taking the brick produced for a month and the power consumption for the same time and I hope the opportunity will come so that I may obtain these values.

If there are any further points regarding the test or the operation of the motors, that you would like to have, I would be pleased to give you any information that I can.

Yours truly,

WESTINGHOUSE ELECTRIC & MFG. CO.,  
Industrial and Power Department

Secretary Plant: It would appear from that that a 60,000 capacity brick plant using 155 horse power is considerable economy.

Mr. Dennison: I would like to ask the gentleman what is the comparative cost of the electrically driven apparatus and a belt-power driven, compared first in installation cost.

Mr. Seville: I am sorry I can't give the gentlemen of the Convention any definite figures on the comparative cost of the electrical plant with the mechanically driven plant. I can, however, give you some rough idea of the cost of electric machinery, and your knowledge of what is put in your mills may enable you to make the comparison.

The cost of the electrical machinery varies widely, depending on the particular type and speed of machinery chosen, just as the cost of a steam engine of a given horse power will vary widely with different speeds. For the sake of a rough estimate, however, for the generating equipment, using the belt-driven generator of moderate speed, if you would estimate the cost of your generator at about \$10 per H.-P. output, you would be within a very short distance of the market cost. The cost of your motors in the sizes of about 15 to 20 H.-P. would probably run about \$15 per H.-P. output. That is complete with all the necessary starting devices and the belt tightening devices that are usually furnished with motors where they are made belt-driven. For the geared motors they would be slightly cheaper—probably 5 per cent or 6 per cent, for no belt tightening devices are required.

There is usually an objection raised to installing electrical apparatus on account of the first cost, but I think if the figures were gone into and the first cost of the shafting and the hangers and the tight and loose pulleys, etc., that are used in connection with machines were set off against the first cost of electrical machinery, you will find that the first

cost of mechanical transmission would mount up considerably higher than people usually think, in comparison.

President Brecht: The next item on the program is, "The Dryer System." We have here the names of several gentlemen whom we thought would be here to respond, but it seems that they have either gone home or are out celebrating in some manner and they are not to be located. So I think we will pass that subject, unless there should happen to be some one here who wants to discuss it.

The next is the report of Committees. I believe our Secretary has the report of the Committee on Nominations.

#### REPORT OF COMMITTEE ON NOMINATIONS

The report of the Committee on Nominations was read by the Secretary as follows:

W. H. Brecht, President.

We, your nominating committee, beg leave to report the following nominations:

President, C. J. Smith, Mason City.

Vice-President, Geo. Snurr, Kalo, Iowa.

Secretary, C. B. Platt, Van Meter.

Treasurer, F. A. Stephenson, Mason City.

B. M. HUNTLEY,

D. F. MOREY,

F. A. STEPHENSON,

Mr. McHose: I move that the report be adopted and that the persons named be elected our officers for the ensuing year.

Motion seconded and carried.

President Brecht: We will now hear from the Resolutions Committee.

J. B. McHose, chairman of the Committee on Resolutions, read the following report:

#### REPORT OF COMMITTEE ON RESOLUTIONS

That this Association again urge upon our Legislature the importance, to the great industrial interests of the State, of properly equipping the Iowa State College for the investigation and instruction in the various ceramic questions arising in the clay and cement industries and to furnish the technical instruction required in these lines, to the end that our State may be abreast with the schools of our sister States. That we will individually urge upon our representatives a liberal appropriation therefor.

That we are glad to express our appreciation for the royal treatment we have received while in the city at the hands of the mayor, local clay workers and machinery men; and for the elegant entertainment furnished by their generosity.

That a vote of thanks be extended to the Commercial Club for the trolley ride to the various plants and shale beds north of the city; also to Messrs. Cummings, Belding, and Botsford of the Inter-Urban Ry. Co. for the entertainment afforded during the trip.

That this Convention extend a vote of thanks to the retiring officials for the very able manner in which the affairs of the Association have been administered and the progress made by the Association during the past year, which has made possible the most successful and instructive Convention in the history of the Association, as is witnessed by the 140 members present.

J. B. McHose,

F. W. STUART,

R. G. COUTTS.

Upon motion by Mr. Hansen, duly seconded, the report was adopted.

Mr. Dennison: If you will allow me to indulge in just one more word, I wish to extend an invitation on the part of the Clayworkers of Mason City to hold the next meeting at Mason City. We have several factories there which are operated all the year—at least they are now; we don't know what will be the case another winter. We have quite a va-

riety of machinery, quite a variety of kilns and quite a variety of dryers, and in the ordinary course of events they will be in operation so that you can see what we have endeavored to work out along the line of manufacturing clay. For instance, in dryers we have direct heat dryers and indirect heat with fires under the tunnels; we have live steam dryers; we have fans and fan dryers—a dryer with two fans, a dryer with three fans, and a dryer with forty-two fans. So you have an opportunity to investigate and see what will suit you best. In the kiln line we have up-draft and down-draft, large kilns and small kilns. We have kilns with eight stacks and with eight kilns on one stack, with two stacks on one kiln and two kilns on one stack; and we have in addition kilns without any stack at all. That is the "cook-stove" you have heard of. We hope you will come and see us.

Mr. McHose: I move that the invitation be accepted.

Motion seconded and carried.

President Brecht: The next, I believe, is the Secretary's report.

#### REPORT OF SECRETARY

There are one or two little matters that I have observed in my short term as Secretary, which, I wish to say, gentlemen, is somewhat of a strenuous occupation. In 1904 the Convention was held at Mason City, with an attendance of 75; at 1905 in Ottumwa with 98; in 1906 at Des Moines with 103; in 1907 at Sioux City with 76; in 1908 at Des Moines with 138. The attendance at Des Moines contains 20 per cent of names of machinery men and men not directly occupied in the production of clay ware. The list does not correctly designate the full membership, nor does it contain the names of all the individuals in attendance or directly occupied in clay working production. Your Committee extended to the men who were not directly interested in clay-work production, and who aided in the convention registration, and to two clay workers who requested registration because of having two other memberships. This explanation is offered because of the fact that we do not turn into the treasury \$2.00 for each registration.

You will note the matter of attendance in connection with the location of the conventions. There has been considerable talk among different members as to the advisability of making Des Moines a permanent headquarters meeting-place. There is little virtue in that so far as the clayworkers outside of Des Moines are concerned, as it would be considerable of an imposition on the clayworkers and machinery men of Des Moines if we should do such a thing. You will observe that the attendance at Ottumwa was 98. That is a little off the center of the State, but it would indicate that as we go toward the borders of the State with our Convention the attendance is apt to be less. We haven't very many towns in Iowa in which we can hold our Convention and be accommodated, and on that account it might be a good move eventually to locate in Des Moines. But if we do that we should have to increase our membership fees, and it seems to me that it would be a pretty good idea if this Convention would take action on the increase of membership fees. What money we can gather into our treasury we could certainly use some way or other.

The receipts from registration at Des Moines this time are ..... \$212.00  
Received at Van Meter by advance registration.... 64.00

\$276.00

The expenditures you will find a little but higher than they have previously been. We spent a good deal for postage, for one thing, and our printing bills are larger than common. I think, however, we will all agree that this system of numbering is of some considerable advantage to the members in getting acquainted.



## CLAY RECORD.

Postage .....	\$10.25
Membership cards .....	3.75
Circular letters .....	0.50
Membership book .....	2.00
Badges .....	6.00
Headquarters sign .....	.75
List of Members .....	11.00
Programs .....	20.25
Secretary's salary .....	25.00

Total .....

The other figures would be in the Treasurer's report, but I can give them:

Balance from last year .....

Receipts for 1908 .....

Total receipts .....

Deduct expenses .....

Balance on hand .....

Upon motion of O. T. Dennison, duly seconded, the report was accepted and ordered spread upon the records.

Secretary Platt: We have here a copy of the proceedings of the seventh annual meeting of the Wisconsin Clayworkers. It was put up in this book form and contains the proceedings and the papers of that Convention. I would seem to me that it would be a very desirable thing for our Association to adopt this method and mail each one of the members of record a copy, that they may have it for convenient reference. This book contains the by-laws of the Association also, a list of all present and past officials, and a classification list of members—machinery men and all those engaged directly in the clayworking industry that are members of the Association. It also gives all the Committees that were appointed. The report of the Wisconsin secretary I think shows a cost of about \$86.00 to get out this report and mail it. They have only about 75 members and I think possibly not that many. They have sold some advertising space in this book, and while I think possibly it would be as well to leave that out, we might secure enough advertising to very materially aid in the publication of this book if we should decide to do so. There can't be any question of the value of the publication, because it has everything in form for permanent record; and as long as we have the money it seems as though we might as well spend it in that way as any, and every man would then have a copy of the proceedings and papers for reference.

Another matter. I found on taking hold of the duties of Secretary that there is a great deal of matter that it would seem ought to be in existence somewhere of the records of the Association. There are minutes, of course, of the meetings, containing the list of names and a list of committees and the Secretaries' and Treasurers' reports, but that is all that is contained in the minute books, we having depended on the clay journals to give a record of the meetings. You know that is rather uncertain for a matter of filing. I think we ought to have a permanent location for the property of the Association, and I would think it might be very appropriately located at Ames, where we hope to establish our school. There is a lot of matter that could be sent there for storage and reference, and everybody would know where it was at all times. The Secretary is apt to meet with misfortune some way and lose some things, and then the value is gone to the Association. Mr. McEllose spoke of next year taking up a history of this Association, and it is going to be rather difficult for the man who writes it to gather his data. If we had things on file at Ames, it would be very much easier. If we had these proceedings in book form it would be much easier.

Prof. Beyer: I would like to ask the Secretary if he has

had any correspondence with the managing editor of the Iowa Engineer in regard to some of these records—Mr. Williams.

Secretary Platt: I haven't, Mr. Beyer. The only correspondence we have had with Mr. Williams was in regard to the official organ of the Iowa Clayworkers—as to the Iowa Engineer being that organ. We took that up with the Executive Committee, and it made that journal our official organ. Of course, it is not a clayworking paper, but it is an engineering paper, directly interested in Iowa fields, and it seemed to the members of the committee appropriate that it should be the official organ.

Prof. Beyer: All that I wanted to say was that of course we shall be glad to do anything we can to promote the good work. We have been publishing the complete proceedings of the cement works, even to the extent of furnishing a stenographer and working out the proceedings ourselves. I don't know whether it would be advisable to do the same with the clayworkers or not, but any scheme that is advisable we will be glad to co-operate in to the fullest extent.

Mr. Stevens: I move that the Secretary be instructed to print in pamphlet form, with paper binding, the proceedings of the meeting this year.

Mr. McEllose: And mail to the membership?

Mr. Stevens: I suppose that is the proper thing.

The Secretary: In Wisconsin they make no charge except to the people who are not registered. I think they charge them 50 cents for it.

Mr. Stevens: You will expect then to print a number of extra copies?

The Secretary: Not very many.

Mr. Stevens: I don't know then as it is necessary to include that in the motion. Is 200 sufficient?

The Secretary: I should think so; amply.

Mr. Stevens: Twenty-five or thirty would not make much difference in the cost. I move that the number be fixed at 200 and that the Secretary mail to each member a copy.

Motion seconded by Mr. McEllose and carried.

President Brecht: Is there anything that any of you would like to bring before this Convention at this time, speak up. Our deliberations are now concluded; our program has been completed; and a motion to adjourn is in order.

Upon motion of Mr. Dennison the Convention thereupon adjourned *sine die*.

## BOILER IN TILE WORKS AT PAW PAW EXPLODES: KILLS ONE, INJURES THREE

The boiler at the J. M. Beale and company tile factory, located just outside of the limits of Paw Paw, Ills., exploded, killing one workman, seriously injuring two and slightly injuring two other workmen.

The dead man is Frank Boyers, whose home is at Berry, Ky. He was unmarried.

The two workmen seriously injured may die.

The cause of the explosion is not known. The boiler was full of water and the valves were all working at noon.

The report was heard all over the village and people left their places of business and homes to run out into the street to ascertain the cause of the report. Farmers living several miles from Paw Paw heard the report.

The amount of damage is several thousand dollars and all of the special machinery and buildings are completely wrecked.

# BRICK BEST TO RESIST FIRE TEST MADE BY GOVERNMENT

Washington, April 27.—The conflagration at Chelsea, April 12, which rendered 10,000 persons homeless and resulted in a property loss of several million dollars, following, as it did, closely upon the heels of the Boyertown, Penn., and Collinwood, O., holocausts, has added much significance to the fire tests of building materials that have been conducted recently by the U. S. geological survey, in behalf of the government.

The federal government, owner of buildings valued at more than half a billion dollars and spending \$20,000,000 every year for new structures throughout the country, conducted these tests in order that its architects and engineers may have definite information concerning the fire-resisting qualities of the different materials of construction, to the end that the government's buildings may be properly safeguarded from fire within and without.

The government engineers have long contended that, with present methods of construction, a conflagration, resulting in the destruction of millions of dollars worth of property and the sacrifice of human life, is possible in every city of any size in the country. Their position has been proved in a tragic manner by the Baltimore fire, the fire following the earthquake in San Francisco, and that in Chelsea just the other day.

It is the belief of the engineers that these great fires are unnecessary, and can be prevented by the erection of proper fireproof buildings. The government does not insure its buildings against loss by fire, but bends its energies toward making the structures fireproof. A small fraction of what would be paid to insurance companies in premiums is being spent in finding out the materials that are best adapted to resist fire.

The first of a series of elaborate tests have just been completed by the structural materials laboratories of the geological survey, under the direction of Richard L. Humphrey, engineer in charge. The tests were conducted at the fire underwriters' laboratories in Chicago and were made possible by the cooperation of the national board of fire underwriters and the National fire protection association. Thirty panels of various building materials, including concrete, building blocks, common, hydraulic pressed and sand lime brick, concrete of gravel, cinder limestone and granite, glazed building and partition terra cotta tile, sandstone, granite and marble building stone were tested. The materials were subjected to the direct application of heat for two hours, and were then immediately quenched with water. The effort was made to obtain a maximum temperature of 1700 degrees Fahrenheit within half an hour after starting the tests and to maintain this temperature as nearly as possible constant through the succeeding half hours.

The building materials were placed in a sliding panel, which, when arranged for the fire tests, formed one side of the furnace. In the furnace gas flames were forced by a blast of air against one side of the panel. After two hours the panel was brought from the furnace and the water turned on from a hose with a pressure of 50 pounds to the square inch.

The conditions under which these tests were made were unusually severe, and as none of the materials passed perfectly, it proved a good test for comparative purposes. The temperatures used would hardly be reached in an ordinary fire, but might be in a conflagration.

"While these tests are not conclusive, being but the beginning of a general line of investigations," said director Smith, of the geological survey, "they bring out a number of important facts. The brick panels probably withstood the tests better than any other materials. There were two lots of common brick tested—one was an unused, recently manufactured brick, and the other a brick that had been in an engine foundation for some years. The latter seemed to withstand the test the better. Fifty per cent of the new brick were split, while 60 to 70 per cent of the old bricks were not damaged. The bricks at the back of the panel were entirely unaffected. The hydraulic pressed brick stood the test better than any other material. No damage was apparent whatever after the firing and before the water was applied, and although a number of the bricks cracked, 70 per cent of them were found to be sound after quenching. There was apparently little difference in the strength of the bricks before and after firing. The natural building stones behaved the worst of all the material tested. The almost complete destruction of these stones precludes any comparison between them. The sandstone panel entirely collapsed soon after the test was started."

The testing engineers report that it was difficult to determine whether the concrete made of limestone, granite, gravel or cinders sustained the least damage. Their surfaces were all rather badly pitted by the fire and washed away by the stream of water. The test was unfair to cinder concrete, as the sample of cinder was very poor, containing a large percentage of unburned coal, which ignited and left the surface of the concrete badly pitted. The granite concrete probably behaved the best. The damage in no case extended very far into the concrete, probably not more than one and one-half inches. The evidence shows that even at this depth the temperature was comparatively low. The rapid heating of the face of the concrete, while the back remained cool, caused the concrete to crack vertically for some distance back from the face. The cracking of the concrete can be avoided, it is believed, by using metal reinforcement, which would distribute the effect of the expansion. The tests also brought out most clearly the low rate at which the heat travels through concrete. This is one of the desirable qualities in materials intended for fireproofing purposes.

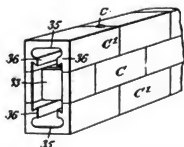
Linen, tags which were placed in the hollow concrete blocks when they were molded, were found to be undamaged after the fire test. In many instances, the hollow blocks split after being subjected to the fire and water test. It was noticeable that the richer the mortars used in these blocks, the less they were affected by the test. The mortars mixed with the greatest percentage of water gave the best results. The wetter, richer mixtures in these tests stood out apparently undamaged in contrast with the damaged faces of the leaner, dryer blocks. It is apparent that one of the causes of weakness in the hollow cement building blocks is in the weakness of the concrete, due to a too dry and thin mixture, which, coupled with the thinness of the webs—the thin pieces connecting the walls of the blocks to give strength—provides insufficient strength to resist the rapid expansion of the face of the blocks under test. By making the webs thicker, they can be made to stand the fire test satisfactorily.

## CLAY RECORD.

NEW INVENTIONS THAT ARE OF INTEREST  
TO THE CLAY MANUFACTURER.

876,298. Brick Molded for Walls with a Monolithic Internal Skeleton. Vincenzo Compagnone, Naples, Italy. Filed May 3, 1907. Serial No. 371,971.

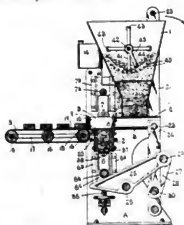
Claim.—A beam or the like, comprising a plurality of rectangular bricks laid in courses, the bricks of the intermediate course being set edgewise and each having its ends recessed and provided with a plurality of transverse partitions, and the bricks of the outer courses being set flatwise and each having in one side face a U-shaped recess, the side walls of which are provided with undercut ribs, the whole being adapted to be filled with cement.



A beam or the like, comprising a plurality of bricks laid in courses, the bricks of the intermediate course being set edgewise and each having its ends recessed, and the bricks of the outer courses being set flatwise and each having in one side face a U-shaped recess, the side walls of which are provided with undercut ribs, the whole being adapted to be filled with cement.

876,388. Brick-Press. Joseph J. Nieters, St. Louis, Mo. Filed Mar. 12, 1907. Serial No. 361,073.

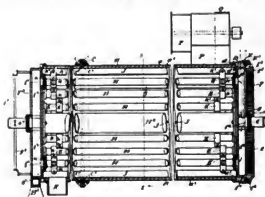
Claim.—In a brick-press, a support having rolls journaled thereon, an endless belt mounted on said rolls, means for feeding the bricks onto said belt as they are ejected from the mold box, a toothed wheel connected to one of said rolls, and a toothed bar secured to the member that moves the bricks onto the belt, said bar being adapted to move said toothed wheel; substantially as described.



In a brick-press, a plunger, a movable member adapted to travel past said plunger, a pad carried by said movable member for applying a lubricant to the pressing face of the plunger, a receptacle for holding a quantity of lubricant, and means actuated by said movable member for tilting said receptacle to discharge the lubricant onto said pad; substantially as described.

875,874. Drier. Jacob Weintz, Cleveland, Ohio. Filed Apr. 30, 1906. Serial No. 314,334.

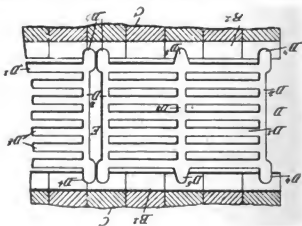
Claim.—In a drying apparatus, the combination of a stationary cylinder having hollow rotatable heads at its ends; exterior steam pipe connections to said heads; a series of longitudinal pipes within the cylinder connecting heads; and means for rotating said heads and their connecting pipes.



In a drying apparatus, the combination of a stationary cylinder provided with material inlet and outlet openings; hollow heads closing the ends of said cylinder; ball-bearings in the one end of said cylinder wherein the corresponding head is rotatably mounted; a roller bearing adjacent to the other end of said cylinder wherein the other head is similarly supported; a series of pipes within said cylinder connecting said heads; and exterior steam connections for the latter.

877,825. Grate for Brick-Kilns. Peter F. Bennett, Roseton, N. Y. Filed June 25, 1907. Serial No. 380,804.

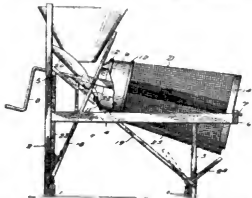
Claim.—A grate section for a brick kiln, comprising longitudinally extending spaced grate bars, and cross bars connecting the said grate bars, lugs at the corners of the grate section, the lugs extending sidewise beyond the sides of the outermost of the said cross bars and adapted to engage a



supporting means for supporting the section, said lugs also extending endwise beyond the cross bars whereby to properly space the adjacent grate, an intermediate cross bar integrally connecting the grate bars with each other, and intermediate lugs projecting integrally outward from the side grate bars opposite the ends of the said intermediate cross bar, and adapted to engage a supporting means, the said corner lugs and the said intermediate lugs being rounded off at the bottom.

877,803. Rotary Screen. George F. Smailes, Newark, Ohio. Filed Feb. 28, 1907. Serial No. 359,761.

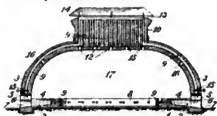
Claim—A rotary screen comprising a frame, a drum with a shaft rotatably mounted on the frame, said drum having longitudinal radial arms therein, a hopper on the frame, a slotted chute communicating with the hopper, an auxiliary chute communicating with the slotted chute, and with the inner open end or mouth of the drum, an adjustable grading



apron for the drum, and means for guiding the material and preventing the scattering of the same, substantially as specified.

877,300. Kiln for Burning Brick, Lime, and Similar Material. Paul Czizler, Szekes-Fejervar, Austria-Hungary. Filed Dec. 20, 1906. Serial No. 349,060.

Claim—A kiln for burning bricks and the like comprising a bottom having a trough 8 therein and channels 9 leading from said trough to the sides of the bottom, an inclosing wall having channels therein forming continuations of the channels 9, a roof having a chamber therein into which the channels of the walls lead, said roof having channels 12 therein leading from the chamber into the kiln, and a movable roof for closing or opening said chamber to the atmosphere, substantially as described.



A kiln for burning bricks and the like comprising a bottom having a trough 8 therein and channels 9 leading from said trough to the sides of the bottom, an inclosing wall having channels therein forming continuations of the channels 9, a roof having a chamber therein into which the channels of the walls lead, said roof having channels 12 therein leading from the chamber into the kiln, a movable roof for closing or opening said chamber to the atmosphere, and doors 15 for controlling the channels 9 and 12, substantially as described.

#### H. BREWER & CO. WILL ERECT NEW SHOPS

Expansion is the order of the day, at home and abroad, and it is apparent in Tecumseh, Mich., and its business firms as it is in other places. Since its inception in a small way in 1849, the firm of H. Brewer & Co., manufacturers of clay working machinery, has occupied the same site with its machine shop and foundry, at the corner of Shawnee and Evans street, increasing their capacity as the needs of their business demanded it. But the business of the firm has finally increased to such an extent that the old, poorly light-

ed and arranged shops and foundry have become entirely inadequate to their needs and they are forced to expand not only their quarters but their capital stock in order to properly take care of it.

To this end the firm has purchased a piece of land lying east of the Anthony Fence Co.'s factory and west of Ottawa street, on which this year will be erected a plant of large and handsome buildings, which will be well lighted and ventilated and equipped with all sensible modern labor saving machinery and tools.

To provide the means for these improvements and to take care of the steadily increasing business of the firm, which during 1907 was the largest in its history and so far this year is even greater than in 1907, the volume of business done in the month of March being the largest it has ever known, the capital stock of the company has been increased to \$250,000, of which \$175,000 will be paid in cash, principally by the original stockholders of the concern.

A brief description of the new shops is as follows: The main building is to be one story high, 16 feet to the eaves, 322 feet long and 90 feet wide. It will contain the offices, machine shop, woodworking shop, forge shop, and warehouse. It will be built of brick in the manner known as slow burning construction.

Adjacent to, but independent of the main building, will be the boiler house and coal bins, which will contain the big tubular boiler, 5x16 feet in size, which will supply the steam for the two Atlas engines, 40 and 75 horse power respectively, that will also supply the steam to heat the buildings.

Twenty feet in the rear of the main building will be the foundry, 100x50 feet, having an appendant cupola and blower house 30x30 feet, and a room for the manufacture of foundry cores 25x25 feet. The roof of the foundry will be a truss roof, so that there will be no posts on the floor.

Still further in the rear will be a two story brick pattern storage house 50x60 feet in size, isolated as much as possible from the rest of the plant to decrease the risk of fire.

At different points on the ground will be located such buildings as coke bins, sand bins, oil house, etc. All the buildings will have gravel roofs and all will be fully and adequately lighted.

The equipment of the shops will be fully in keeping with their other fine appointments. The machine shop will be equipped with all sensible, modern, labor-saving appliances and tools, traveling cranes and tram tracks running throughout the shops for convenience in handling heavy machinery and castings.

The foundry will be supplied with jib cranes and tram tracks, the latter connected with the main building, thus affording easy transportation for heavy patterns, flasks and castings.

The railroad facilities will be furnished by a spur track connecting with the Anthony Fence Co.'s track at the rear of their property and with a straight track running parallel with all the buildings the entire length of the plant. Arrangements for these facilities were made with Superintendent J. J. Burnett and E. J. Downey, industrial agent, of the Lake Shore railway.

While the plans and specifications have been completed, arrangements for letting the contract have not yet been made, but local and outside contractors are figuring on the work and ground will be broken within a few weeks.—Tecumseh Herald.

## CLAY RECORD.

PUBLISHED SEMI-MONTHLY BY THE

CLAY RECORD PUBLISHING COMPANY,

Ninth Floor, Plymouth Building,

303 Dearborn Street,  
CHICAGO.

GEORGE H. HARTWELL, EDITOR

## SUBSCRIPTIONS

Send One Dollar bill or stamps for United States, Canada or Mexico and one dollar fifty cents for all other foreign countries.

Papers are not stopped at the end of subscriptions unless the subscribers order them so and pay up the arrearages.

Entered as Second-Class Matter, January 25, 1893, at the Post Office, Chicago, Ill., under Act of March 3, 1879.

Vol. XXXII.

APRIL 30, 1908.

No. 8

"I like to read American advertisements. They are themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

About the busiest thing on earth is an idle rumor.

A little flattery now and then will soften up the hardest of men.

It doesn't do much good to talk to the average man for his own good.

Think three times before you speak—then you may decide to keep your face closed.

Nothing jolts a narrow-minded man more than being forced to admit that he is in the wrong.

If you imagine this is a cold unsympathetic world, tell people you have a cold and listen to their suggestions.

Did you subscribe to the Clay Record, as we asked you last month? If not it is not yet too late. The banks are still open and we can receive it any time, but the sooner the better for both of us. Do it now.

Read what John Wanamaker says above. Nothing is more true than the statement, that "when times are dull it is the very time to advertise." Reduce your expense anywhere you can but double the advertising account.

## BUSINESS PICKING UP IN NEW YORK, BUT PRICES RULE LOW

Everything pertaining to the manufacturing end of the metropolitan brick trade continues on the same minor note. Material is moving at a very slow rate. A few manufacturers, urged by their necessities, send down occasional cargoes to add to the surplus in the market or else to be sacrificed at prices below cost—or what existing circumstances really warrant, in the opinion of others. Quotations in the absence of anything like a normal demand are merely nominal. In view of the element of force liquidation prices have a wide range, but no considerable amount of business could be transacted at the minimum or bargain rates occasionally reported.

Some of the dealers report that there is a disposition among builders having money at command to take advantage of the very apparent opportunity to obtain material at extremely low rates and the best service that mechanics can give, and they believe an improvement is at hand.

In general business lines there is noted a steady but slow recovery of normal conditions. Mercantile collections are reported as greatly improved.

About the busiest part of Manhattan in construction work at present is in the vicinity of Washington Heights, in the opinion of Mr. W. D. Goss, president of the Empire Brick and Supply Company, 784 Broadway.

"Most of the orders received recently are for delivery in that section," said Mr. Goss. "There are a number of apartment houses going up and a good many estimating in progress. In Brooklyn builders are putting up a number of three-story apartment houses, calling for a good quality of brick.

"Business is picking up somewhat, although it would be much better if the money market would loosen up."

Pessimism has no place in the business of the Harbison-Walker Company, 1133 Broadway, according to the sales agent, Mr. C. J. Henderson, who was queried as to what his concern has been doing the past few weeks and concerning prospects for the spring and summer. Mr. Henderson admitted that during the worst part of the industrial depression last winter, particularly from the first of the year to the middle of February, things were somewhat quiet, but he offset this by declaring that within the past six weeks the company has sold more brick than in any successive six weeks of last year, notwithstanding the fact that last year was a most gratifying one.

Prices of brick by cargo lot are \$5.25 to \$5.75 for Hudson River common, \$4 for light hard.

## ELDORA TILE PLANT HAVE WAGES RAISED TEN PER CENT

Eldora, April 22.—Carl Reeve, manager and proprietor of the tile plant here, has announced a 10 per cent raise in the wages of all his employees. The raise came unsolicited upon the part of the men employed by Mr. Reeve, and therefore was greatly appreciated by them. This establishment gives employment to a large number of men, and hence means a magnanimous thing upon the part of the owner, especially in view of the fact that he is compelled to pay an advance per ton in the price of clay.

## OBITUARY

Charles B. Pare, while mentally unbalanced, committed suicide at Glasgow, Ky., by hanging himself in the smoke-house with a cow halter breaking his neck. He was a wealthy retired brick manufacturer and was 57 years of age. He leaves a wife and daughter.

Charles Henry Melcher, a retired brick manufacturer and member of the Philadelphia, Pa., bar, died from heart disease, aged 70 years. He was born in Philadelphia in 1837 and is survived by two daughters and three grandchildren. He lived at 1811 West Venango street.

T. F. Mardis, of Winterset, Iowa, and father of John Mardis, the Des Moines contractor and brick manufacturer, died at his home. He was the most prominent citizen and business man in Winterset, was a leading contractor and well to do. Four children survive him. He was buried with Masonic honors.

## FIRE! FIRE! FIRE!

The Barkhausen Brick & Tile Works at Green Bay, Wis., sustained a loss by fire of \$2,000 last week. Loss was covered by insurance.

The roof of the dry kiln at the Fulcher Brick Co.'s plant at Nashville, Tenn., was burned off causing damage to the amount of several hundred dollars.

The stables connected with the Glengery Brick & Cement Co.'s plant at Shoemakersville, Pa., was destroyed by fire and caused a loss of several hundred dollars.

The plant of the Granite Brick Co., Glen Falls, N. Y., suffered a loss of \$5,000 by fire, caused by a cinder from a freight engine. President Daniel P. DeLong says it is fully covered by insurance and will be rebuilt at once.

Fire supposed to be incendiary was timely discovered in the plant of the Manitowoc (Wis.) Clay Products Co., and but for prompt work the plant would be destroyed. The loss will be only a few hundred dollars. One year ago the plant was damaged by fire to the extent of \$10,000.

## MACKLIN LEAVES THE BRICK COMPANY

Col. Charles F. Macklin has resigned the presidency of the Baltimore (Md.) Brick Company and has been succeeded by Carroll Van Ness. When the directors of the Company met after the stockholders' meeting in Wilmington to organize, Colonel Macklin offered his resignation, stating that he desired to be able to devote his entire attention to his other interests.

Colonel Macklin was succeeded on the board by Samuel C. Rowland. Richard Cromwell, Jr., was elected a vice-president of the Company, and the other officers were re-elected—Samuel R. Bussey, general manager, and Harry F. Remley, secretary and treasurer.

Mr. Van Ness, the new president, is treasurer of the Maryland Trust Company, and will handle the duties of his new office in connection with those of his present position. The Maryland Trust Company is heavily interested in the Brick Company.

John C. Vick of Bryan, Texas, is interested in organizing a brick and tile works at that place.

## ACCIDENTS, DAMAGES AND LOSSES

A bankruptcy petition has been filed by Henry R. English, president of the Jackson (Mo.) Brick & Tile Co.; assets are \$925 and liabilities are \$63845.

A receiver has been appointed for the New Jersey Brick & Supply Co., 156 Frelinghuysen Ave., Newark, N. J. The liabilities and assets are about \$8,000.

James Cooksey has started suit for \$2,500 damages against the Sheridan Brick Co., of Brazil, Ind., for injuries sustained while at work at the company's plant.

A workman asks \$8,000 damages of the North Iowa Brick & Tile Works at Mason City, Ia., on account of being injured while at work in the company's clay pit.

Frank L. Stiles, of North Haven, Ct., has begun the foreclosure of the mortgage on the brick works of W. L. Davis, the Berlin brickmaker, whose affairs are tangled.

A bill has been filed asking for a receiver for the Guyan Valley Brick Co., Barboursville, W. Va. The bill claims only one-half of the capital stock was subscribed.

William Mann, a laborer employed at the Phoenix Brick & Con. Co.'s plant at St. Joseph, Mo., was badly injured in the shale bank. He was removed to the hospital.

The C. & N. W. Ry. paid the Manitowoc (Wis.) Clay Products Co. a little over \$15,000 for damages caused by through the property of the company separating the clay pit from the works.

Two men were caught in the fall of the roof in the clay pit of the Westmoreland Brick Co., at Hunkers, Pa., one Peter Kukitch being killed outright and Sam Tortwisch crushed so he will die.

Harvey Shaw, the well known brick manufacturer at Joliet, Ill., had his left arm badly crushed in the brick machine so it was necessary to amputate it at the elbow. He was taken to the Silver Cross hospital.

The boiler in the J. M. Beale & Co., tile works at Paw Paw, Ill., exploded and killed one workman, seriously injured two and slightly injured two more. The machinery and the buildings are a complete wreck.

## DRAIN TILE BUSINESS HEAVY AROUND COLUMBUS

There is one line of industry which is overcrowded with orders and is finding it impossible to supply the demand made upon it for its product. This is the manufacture of drainage tile for the use of farmers, and while there are hundreds of plants in Ohio making tile, none of them is able to keep up with its orders.

The farmers this spring have plenty of money and are using it to improve their farms and all over Central Ohio more tile drainage is being done than ever before. Several Columbus business men who own farms have been trying to get tile for some time and one of them was compelled to order it from a northern Ohio factory, although there are half a dozen tile plants within a few miles of his farm. Hundreds of acres of land which have been too wet to do much with except in the most favorable seasons, are now being drained, and they will add thousands of bushels to the grain production of the state.

## CLAY RECORD.

### FOREST CITY BRICK COMPANY TO MAKE PEAT INTO FUEL

One of the most unique industries in Iowa is soon to be put in operation—a peat machine for utilizing the peat fuel that is found in such immense beds in this section of Iowa. It will be operated in connection with the new brick and tile plant of the Fertile Clay and Peat company, and the peat will be used in burning its brick and tile output instead of coal.

The Fertile Clay and Peat company owns 764 acres of land, which embraces a valuable deposit of clay, consisting of a forty-three-foot vein and covering about 100 acres. This clay is suitable for the manufacture of a high grade face pressed brick of a beautiful and unique color, which should command a fancy price in the market. The company has employed Mr. Radford, who has been, since 1886, engaged in building and operating brick plants, to construct and put the plant in operation.

The company also owns about 640 acres of peat land and a complete Helien peat machine capable of producing 60,000 to 80,000 brick or turfs per day. This peat deposit is about twenty feet deep and is absolutely pure, without sand or grit and will produce 4,000,000 tons of peat for use and market. The excess of peat fuel above the needs of the company will be sold for fuel. The complete cost of the land, buildings, peat and brick machinery ready to operate will be about \$70,000.

The need of adequate transportation facilities for the marketing of this valuable product is very pressing. At present it is necessary to move the brick overland by wagon road to Hanlontown, the nearest railroad point, four miles away, and the company feels that the delay and expense of this method is fast becoming intolerable. The Rock Island engineers have completed the survey to Mason City and it is a practical certainty that the road will be built through from Rockford to that point. The promoters of the Fertile industry argue that if the railroad officials can be assured that an extension of the line through Fertile to Forest City would be profitable, such extension will be made.

### DENISON TO BUILD MODERN APARTMENTS

O. T. Denison of the Mason City (Ia.) Brick and Tile company is now constructing sixteen model apartments, and is thus aiding materially in the work of furnishing good homes for the many families in the city who find it impossible to find desirable places of residence. These apartments will be occupied by the families of men employed by the Mason City Brick & Tile company.

The large two-story brick building formerly occupied by the Mattson Grove works, is being remodeled to make a comfortable and modern apartment house. There will be sixteen apartments, eight on each floor with four rooms to each apartment. They will be modern in every way, with water, heat from the company's plant, gas ranges for cooking and gas light. Every room will be fitted for gas lights.

These apartments will be completed and ready for occupancy June 1. The tenants are already waiting to be admitted to their new homes.

### OMAHA BRICK SUPPLY PROMISES FULL CROP

Every brick yard in Omaha, Nebr., has begun its work for the summer season, all danger of freezing weather having passed and there will be available for the use of builders about 200,000 Omaha made brick daily. During the winter months, the two yards equipped with patent driers have been turning about 50,000 a day. In addition, the brick yard at Avery, which turns out the pressed brick and ornamental brick for the Omaha market, is steadily at work at full capacity.

The Omaha yards start the season at almost full capacity, and though it is not known just how long there will be demand enough to keep up the pace, they will keep it up until they have good sized stocks on hand. These yards will keep about 200 men steadily employed while the work is in progress.

Prices will average about 50 cents per 1,000 brick less than last year, which means that the cost of brick construction this year will be just that much less. The prices will range from \$7 to \$7.50 for the common building brick, and will be \$8 for sewer brick.

Last year Omaha built eighty-one brick dwellings, eleven brick stores and office buildings, eighteen brick warehouses and factories, three brick churches, four brick hotels, one brick hospital, four brick apartment houses, six brick schools, and seventeen brick buildings for miscellaneous purposes. These used up all of the 30,000,000 brick made in Omaha, in addition to the volume shipped in from Kansas, and their cost was about \$2,300,000 of the total amount of \$4,536,643 of new construction in Omaha last year.

Brick are cheaper now than they have been, and improved machinery and methods of manufacture will have a tendency in future to hold down prices. The demand exceeding the supply has made them above normal price the past few years. There is reason to believe that brick will hereafter be held at present prices, if not lower.

Architects are beginning more and more to make pretty designs for brick homes. In these days of ornamental brick and terra cotta, even the smallest brick cottage can at slight expense be given a finishing touch that will make it a thing of beauty, more comfortable than a frame structure of equal size, warmer in winter and cooler in summer, and kept up in trim appearance at one-quarter of the cost that must be applied to a frame cottage.

### BECHTELS LIMITED

Catalogue No. 7 has just been issued by Bechtels Limited of Waterloo, Ontario, Canada, who are the builders of exclusively high grade brick and clay working machinery and supplies.

The catalogue is a most complete one containing 72 pages fully describing all the machinery, some of their parts and the systems of drying and making brick. Testimonials appear from not only all parts of Canada but from many of the states in this country.

The motto of the company is "Simplicity has always been our watch word and strength, our passport into the hearts of the clay working public." If you are interested in this line don't fail to write to them.

### SHORTER HOURS AND A READING ROOM FOR EMPLOYEES

The A. H. Hews Co., pottery manufacturers, Cambridge, Mass., announce that the shop will close on Saturdays at 12 noon instead of 5 p. m., as formerly, without loss of pay to those employed by the day. This makes a 54-hour week and gives the men a half holiday the year round without loss of pay. It amounts to the same as giving the men a nine-hour day. Another matter for which the employees are extremely grateful is the installation of a large recreation room over the offices of the concern. This room has been fitted up in sumptuous style by order of Mrs. Hews, who maintains it at her own expense. Mrs. Hews does this in memory of her late husband, A. H. Hews, who was sole owner of the pottery works up to his death. There is a pool table and another one is soon to be added. There are also a large number of card tables and a long library table. All the popular books, magazines, and daily and weekly papers are supplied without a cent of cost to the men.

The firm has given the entire management of the room to the employees and they have selected a board of directors, consisting of three members, Cornelius Dinini, chairman, Nicholas Burke, and Edmund T. Carver. This committee makes all the rules and regulations and looks after the supply of proper reading material. The room is a lively place during the noon hour and the 75 or more employees all take advantage of the fine facilities afforded. Besides Mrs. Hews, the men feel greatly indebted to Roy Pierce, manager, and H. C. Harris, superintendent, for the betterment of the conditions, both in regard to working hours and providing proper recreation during the noon hour.

### SMILES

A smile is the inherent result of happiness. We are a happy nation. We know we are because the constitution of these great and glorious United States guarantees to us the inalienable right to the pursuit of happiness, and we are pursuing her with an unrelenting persistency.

One conception of true happiness consists of an unlimited supply of those fleeting discs of shimmering silver. Then when our bank account becomes fat and still fatter, the smile broadens on our countenance and we are supremely happy and at peace with the world.

The gentlemen who wrote the following pages are unquestionably happy. They are happy because Dame Fortune has smiled upon them and furnished the sunshine necessary for the healthy, steady and permanent growth of their bank accounts. Neither are they in the least backward nor slow to tell how to woo this fickle dame, and a careful perusal of their expressions will but lead one to the true deduction that they have pursued the right course from the beginning in the selection of proper equipment.

So then this is the end of the booklet entitled "Smiles" which was done to a finish in the year one thousand nine hundred and eight by the Publicity Department of The C. W. Raymond Company, which is in Dayton, Ohio, U. S. A.

Between the introductory and the last paragraph are over forty pages of Smiles, write for them.

### AN EFFORT TO CONTROL PRODUCTION OF BRICK

At the meeting of the Hudson River Brickmakers' Association in The Palatine at Newburgh, N. Y., steps were taken to curtail the production of brick the coming season. A committee was appointed to see the manufacturers throughout the Hudson River district in an effort to get them to agree to a 50 per cent reduction as compared with last year. This reduction is not to become operative though unless every man and firm in the association agrees to the proposition.

Statements differ somewhat as to the amount of building that is expected to be done in New York city the coming season. Some of the brick manufacturers state that the building plans filed so far show that only about one-third as much building will be done in the metropolis this year that was done last season, when the prices of Hudson River brick were away down.

Others say that for the first time this spring quotations for Hudson River brick have possessed themselves of the quality of firmness. This is owing to a demand that has at last taken out of the market all but three of the cargoes which were carried over the winter. Last week the number of barge cargoes sold was thirty-eight, or about eleven million brick. Business the current week has been at about the same rate.

Brick building, if it cannot be said to have fully resumed, is resuming. Most of the orders for material are from the upper end of Manhattan and the Bronx.

### EXPECT THE MOST SUCCESSFUL YEAR

After having been idle two months for repairs the St. Anne, Ill., Brick & Tile Company's plant resumed operations. About twenty-five men were put to work and a few more are expected to be added to the force in a few days.

The first day's output was about 30,000 brick. Since then a kiln of tile has been made daily.

It was on January 13th that the plant was shut down after the most successful year in the company's history. The coming year promises to be the banner one in the company's business. At the end of the year just closed a dividend of 20 per cent was declared and paid.

### MASSILLON FIRM SHIPPED CARLOAD OF BRICK TO SINZIG

What is believed to be the first shipment of fire brick from this country to Europe was made when the Massillon (Ohio) Stone and Fire Brick Company shipped over the Pennsylvania railroad a carload of its products to the Rheinahr Glasfabrick Manufacturing Company, of Sinzig, Germany. The brick will go from here to Boston, where it will be loaded on a steamer for Belgium. At Belgium it will be transferred to a train and transported to its destination. The fireproof blocks are to be used in the furnaces of the company to which they are consigned. The carload weighed 40,000 pounds. The material for the furnaces, it is said, have always been made in Europe heretofore. The purchase of this carload will, it is thought, create a foreign market for this sort of American products.



### WESTERN ONTARIO BRICK MAKERS' ASSOCIATION

On February 19th The Western Ontario Brick Makers' Association held their fourth annual convention in the town hall, Blenheim, Ont.

In the morning, after T. B. Shillington, Mayor of Blenheim, had welcomed the delegates, and a vote of thanks for the use of the hall had been passed, the following officers were elected.

President—Adolphus Wehlann, Rodney, Ont.

First vice-President—J. E. Minor, Kingsville, Ont.

Second vice-President—A. W. Hill, Essex, Ont.

Secretary-Treasurer—Alfred Wehlann, Cairo, Ont.

After luncheon, general business was first given attention, then papers were read by Mr. James Wilson, representing H. C. Baird & Son, Parkhill, Ont., and by R. W. Stewart, of The Stewart Patent Kiln Co., Findlay, Ohio, while Messrs John Hitch, of Ridgeway, Ont., and Jules Robinette, of Sandwich, Ont., gave practical talks on the handling of brick.

The delegates in attendance were as below:

Benj. Broadwell and B. Broadwell, Jr., Kingsville, Ont.  
N. Currie, Glencoe, Ont.

George Healey, Wheatley, Ont.

A. W. Hill, Essex, Ont.

H. D. Hitch, Ridgeway, Ont.

Warren Leatherdale, Dressden, Ont.

John E. Minor, Kingsville, Ont.

Jules Robinette, Sandwich, Ont.

J. H. Sipprell, Wilkesport, Ont.

Alex. Smith, Cowal, Ont.

R. H. Stewart, Findlay, Ohio.

John Wardell, Blenheim, Ont.

Adolphus Wehlann, Rodney, Ont.

Alfred Wehlann, Cairo, Ont.

Ang. Wehlann, Aldboro, Ont.

James Willson, Parkhill, Ont.

The paper read by Mr. Wilson was as follows:

#### THE CARE AND HANDLING OF MACHINERY

When I was asked to give you a paper on the care and handling of machinery at your convention, I gladly accepted, from the fact that I was anxious to meet the Western Ontario Brick and Tile makers whom I did not see at the annual convention at Ottawa in December last. Now this question of how to handle machinery may seem simple, but just to say the right thing in the right place, requires considerable thought.

In the first place, it is important that the man or company who is handling machinery should be interested in it. The machinery should be properly installed, that is, set on solid foundations made either of brick, stone or concrete; probably concrete is the best and cheapest, as any rough gravel will do when mixed with the proper proportion of cement.

Machines should be set perfectly level and securely fastened down; the line should be drawn from the engine shaft to the line shaft, and from the line shaft to the machine; all pulleys should be perfectly true, and any pulley running over 100 r.p.m. should be in perfect balance, to insure smooth and steady running. When this is properly

done, belts will transmit from 10 to 25 per cent. more power than they will of running round a curve as it were. When such is the case, belts will stretch on one side and eventually get in such shape that they will not track on the pulley and in a short time the belt is useless and the brickmaker naturally says the last belt he got did not give him satisfaction, but if you will take a look around you will no doubt find your machines are all in a zigzag shape. Again, when a machine fails to do the work represented by the maker, the first thing to do is to make a thorough investigation of the machine. If it is all intact and nothing broken or out of place, you will not doubt find your trouble in the tempering of your clay.

It is a good policy to see that all dry lumps of clay and other rubbish are thoroughly cleaned up before closing down at night. This takes very little time and the cost is money well spent. On closing down at the end of the season each machine should be taken apart as far as possible and thoroughly cleaned. All grinding knives and other exposed parts of machinery, not painted, should be coated with a mixture of white lead, tallow and machine oil, applied with a small paint brush. All belting, whether rubber or leather, should be rolled up and put in a cool dry place. The engine should be treated in the same manner as the machinery. The boiler, which usually receives the least attention, is probably the most important. In all cases the boiler should be thoroughly cleaned out and the man-hole and hand-hole plates should be left open.

The furnace and back door should be left open so as to allow a circulation of air to pass through in order to keep the boiler and brickwork dry, which will prevent rusting. It is a good policy to examine all stays and bolts on the inside of the boiler, to see that they are not broken or loose. This may save serious trouble at some future time.

Another important point in the handling of machinery is the ordering of repairs when you see any part of the machine wearing. Do not wait until it breaks, but order the piece and have it on hand. In nearly all yards there are more or less repairs required in the spring when starting up the yard. The proper time to make a list of these repairs is in the fall when you close down as you have everything fresh in your memory. If you do not wish to order at once, file the list away so that you can lay your hand on it any time. As an illustration of how it pays to keep machinery in good order I have in mind a company of brick-makers who have turned out from 4,000,000 to 6,000,000 brick every year for the past four seasons. One of the brothers told me that it is his duty to be on the yard one hour before starting. He does all the oiling, examines every part that might work loose, and if anything is wrong it is repaired. The result is they have not had a serious break in years, and have never shut down until noon or night.—Canadian Manufacturer.

#### ORDERS AHEAD UNTIL FALL

The Wynn Fire Brick Works, of Blue Ball, Pa., were successful in a test applied by the government to their brick and as a consequence were awarded a large order for brick, to be delivered to Mare Island Navy Yard, California, which will keep the works going full capacity until next fall.

## POTTERY NEWS ITEMS

George M. Smartwood, is now the manager of the Spokane (Wash.) Pottery Co., whose plants is at Clayton.

The stockholders of the United States Porcelain Co., re-elected the old board of directors at their recent meeting.

The Lyons (N. Y.) Stoneware & Pottery Co., has been incorporated by K. M. Mapes, Charles P. Williams and Wm. P. Mapes.

The old Scott Pottery on Front Street, Cincinnati, O., has at last changed hands. The property will be used for other purposes.

The New Lexington, (O.) High Voltage Porcelain Co. have resumed operations at their plant after having been closed down for five months.

Charles Carey has resigned as president of the Perryville (O.) Pottery Co., and the vacancy will be filled by Mr. Moltrop, of Beaver Falls, Pa., a heavy stockholder.

The four potteries at Sebring, Ohio, The Oliver China Co., Sebring Pottery Co., French China Co. and the Limoges China Co., are now all running to their full capacity.

The American Kaolin Co., Daniel Simpkins of Philadelphia, Pa., president, is preparing to develop the kaolin deposits at McMeekin, Fla. The plant will have a daily capacity of thirty tons.

O. C. Pixley, of the Des Moines (Ia.) Clay Mfg. Co., has had tests made of a quantity of Potter's clay, and an effort will be made to interest independent capital in making the ware at Des Moines.

Harry O. Deek of Roodhouse, Ills., an inventor of a clay fence post and burial vault is arranged with the Pittsfield, Ills. Improvement Association to build a \$25,000 pottery and to make good under Deek's patents.

The various locals of the National Brotherhood of Operative Potters have been advised to prepare what resolutions they desire to be acted upon at the Annual July meeting. No resolutions will be presented this year regarding the wage question.

The \$40,000 pottery works, built by the Marshalltown (Ia.) Pottery Co., has been purchased by L. E. Armstrong, of Fort Dodge, and other capitalists and will be called the Plymouth Stoneware Co. Geo. M. Thompson will be the superintendent.

The Water Valley (Ky.) Pottery Co. is now working full force after being shut down for months. New officers are elected. T. P. Guedry is president, Dr. G. F. Weak, vice president, and B. P. Bennett, secretary and treasurer.

The Plymouth Products Co., Fort Dodge, Ia., will soon break ground for a new pottery. It will be located along side of the Plymouth Gypsum Co. and the Plymouth Clay Products Co.'s plants, and will cost \$50,000. The capacity will be 10,000 gal. of stoneware daily. George M. Thompson will be the superintendent.

## THE POTTERY LABOR TROUBLE IS SETTLED

Gladding, McBean & Co., owners of the Lincoln (Cal.) Pottery works, and their employes have amicably settled their differences about wages and hours of labor, and the full force is at work again. The wage scale was readjusted and a day's labor fixed at nine hours.

## SAND OR LIME BRICK OR BLOCK NEWS

B. F. Kern is building a cement brick factory at Rogersford, Pa.

The Sandstone Brick Co., Peterboro, Ont., will soon open their factory for the season and make 25,000 brick daily.

The judgment against the Watertown (N. Y.) Sand-Lime Brick Co. has been vacated and set aside on stipulation of the attorney.

The Saginaw (Mich.) Sandstone Brick Co., has started up for the season. J. C. Reinke is the manager. Many orders are on hand and more in sight.

The Concrete Brick Co., 500 Washington St., Hoboken, N. J., has been incorporated with \$100,000 capital stock by S. S. Ridner, William Coe and Charles H. Phillips.

Charles H. McCormick, 6118 So. Park Ave., Chicago, Ill., contemplates the manufacture of cement drain tile in the south and wants information as to machinery and methods.

The Lake Superior Sand Brick Co., Calumet, Mich., have started up their Ripley plant for the season. 1907 was a banner year for the company and the prospects are, this year will be better.

The Union Pressed Brick Co., formerly the Milholland Press Brick Co., Marion, Ohio, has been started up and business will be pushed to its fullest capacity. J. H. Clarke is the manager.

The Tri-City Sandstone Brick Co., Moline, Ills., has started the plant for the season. W. H. Crume, the general manager, says his company finds business equally good as that of last year.

A company has been formed in Erie, Pa., and has purchased a site from the Reed estate just west of the chemical works that will turn out cement brick. Adam Karsch is president of the company.

The Building Stone & Brick Co., of Ottawa, Canada, has been incorporated with \$60,000 to build a cement, brick and stone factory. Directors are A. Tracy, R. M. Nesbitt and A. H. Edwards, of Ottawa.

The Chelsea Brick Co., Atlantic City, N. J., has been incorporated with \$100,000 capital stock to make brick, concrete, stone, etc. Incorporators are Benjamin Bacharach, I. S. Royal and Henry McIntyre.

The Illinois Granite Brick Co., of Chicago, have bought land at Michigan City, Ind., and is ready to put in switch track as soon as consent is given by the city to go across a small strip of land owned by the city.

The New York Silica Brick Co., New York, has been incorporated with \$100,000 capital stock. Directors are William B. Parsons, 60 Wall St., S. L. F. Deyo, 13 Park Row, and Joseph Bailey, Patchogue, L. I.

W. E. Johnson, of the Connecticut Brick Co., 2 State St., Hartford, Conn., states that they will build two more sand brick plants in the New England states as soon as the Hartford plant is running in a satisfactory manner.

The National Sand Lime Products Co., Spokane, Wash., has been incorporated with \$50,000 capital stock. The directors are John F. Uhlhorn, Shelby Irvine and John O. Bender. They will manufacture brick under the Uhlhorn system.

## CLAY RECORD.

## MISCELLANEOUS ITEMS

Adrian Schenck, of Waynesville, N. C., will establish a brick plant at Canton, N. C.

The Stephen Pratt Brick Co., Detroit, Mich., has been incorporated with \$14,000 capital stock.

The Buckshot Brick Co., Greenville, Miss., has been organized and promises success to its owners.

The Standard Brick Co., Crawfordsville, Ind., have reduced their capital stock from \$250,000 to \$75,000.

Paul Pillatzke is the manager of a new concern that will manufacture 30,000 wire cut brick at Barnum, Minn.

R. N. Webber, of Mount Vernon, Ill., contemplates the erection of a large brick manufactory at Victoria, Texas.

Dr. A. G. Emmers' new steam brick works at New Iberia, La., has been started and is turning out 30,000 brick daily.

W. C. Hunt is the new foreman for the Northern Pressed Brick Co., Crookston, Minn. He moved from Menominee, Wis.

The Ephrata (Pa.) Brick Co. have installed some new machinery and the work of starting the plant will be started at once.

The Missoula, (Mont.) Brick & Tile Co. has been incorporated with \$10,000 capital stock by W. E. Carey and others.

The Mitchell (S. Dak.) Brick & Tile Works, capitalized at \$50,000 is to be erected by C. L. Hampton and Irving Dunn.

The Edwards Brick Co., Columbia, Mo., are sinking a shaft at their works so as to get at the coal to use at the works.

The Bickford Fire Brick Works at Curwensville, Pa., has been started and are now employing 200 men, more will be taken on soon.

The W. E. Lyons Brick & Tile works, Carthage, Ill., has commenced operations for the season. The entire plant has been overhauled.

W. L. McKissick & Co., Carlisle, Ia., will have their \$40,000 brick and tile plant ready to produce finished product in the early summer.

The Heron Lake (Minn.) Brick & Tile Co. are finishing the new Kilns and have already placed much of the new machinery and will soon start.

The Acme Brick Works, Cayuga, Ind., has changed hands and Charles P. Stevens, of Chicago, expects to have the plant operating on full time soon.

Rusch Brothers, of Colville, Wash., have bought George Mowett's interest in the Chewelah Brick Works and have started the plant for the season.

The New Mexico Mfg. & Contracting Co. are burning brick at Belen, N. Mex., and expect to later put in machinery for the making of pressed brick.

The Gleggery Brick & Cement Co., Reading, Pa., has been chartered by Albert A. Gary, W. A. Gary and F. S. Gary. They will build a plant at Shoemakersville, Pa.

Robert C. Martin & Son Co., New York, has been incorporated with \$10,000 capital stock. Robert C. and Robert F. Martin, 156 5th Ave., are among the stockholders.

C. Klose, the head of the Lincoln (Neb.) Brick Works, has bought the interest of Richard Wilkinson in the Nebraska Material Co., and succeeds him as treasurer.

The Goodwin Tile & Brick Co. have installed a machine in their Grand Junction, Iowa, plant to make tile up to 18 inch on account of the growing demand for large size tile.

J. R. Schupham, president of the Pymont Brick Co., states that the spur track will be run into the site of the works at Lincoln, Calif. So construction will soon begin.

The Wabouma Brick & Coal Co., of Birmingham, Ala., has been organized with \$10,000 capital stock. Incorporators are A. M. Holson, S. H. Tuck and J. L. Robertson.

Peter Iler, president of the Omaha (Neb.) Brick, Paint and Tile Co., will increase the capital stock of the company and double the capacity of the plant at Second and Hickory streets.

The plant formerly run by the Cheney (Wash.) Brick, Tile & Mfg. Co. will be started up again for the first time in three years. C. A. Ratcliffe the mortgagee has the property in charge.

Articles of incorporation were filed at Rathdrum, Idaho, incorporating the Washington Brick, Lime & Mfg. Co. with \$500,000 capital stock. Joseph H. Spear and Henry Brock are incorporators.

J. S. Field & C. L. Field, have taken an interest in the Owensboro (Ky.) Pressed Brick Co., C. L. Field being elected secretary and treasurer and will devote his entire time to the business.

The Las Vegas Brick Co. has been incorporated with \$50,000 capital stock by James M. Ireland, Memitz M. Sundt and Wm. G. Haydon all of East Las Vegas, N. M. They will operate the plant at that place.

## DIRECT HEAT

## DRYERS

FOR

BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,

62-64 William St.

NEW YORK CITY

The American Process Co., who have for years been at 62 Williams street, New York, will move May 1st to 68 Williams street, where they will show their fall line of Digesters, Presses and Clay Dryers.

The Face Brick Tucking Co., New York, has been incorporated with \$10,000 capital stock. Directors are Jerome D. Stein, 9 Prospect Park, John T. Cuggy, 113 Washington Ave., and D. R. Davis, 120 Hall St., Brooklyn.

The Missouri Slope Brick and Tile Co., Dickinson, N. Dak., has increased their capital stock from \$35,000 to \$75,000 and are building flood kilns and making further improvements to increase the capacity of the plant.

The Crown Pressed Brick Co., Ormstown, Quebec, is having a complete plant installed by the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa. W. E. Hamilton & Co., of Montreal, are representing them there.

H. E. Snyder of Nevada, Mo., has traded a 2,800 acre ranch for a brick and tile plant at Des Moines, Ia. to A. H. Marshall, trustee of the brick and tile works. Mr. Snyder will take charge of the plant in Des Moines at once.

The Humboldt Brick Mfg. Co., Humboldt, Kansas has made arrangements to extend its plant so as to manufacture drain tile, hollow brick and fire proofing. The work of installing the additional machinery will begin at once.

The New England Brick Co. have moved into the John Hancock building, Boston, Mass., where commodious quarters have been found for their constantly expanding business.

The Burke Bros, Fort Smith, Ark., have leased the Burke Brick Co. works to George Ogan, of Danville, Ill., who will manufacture paving brick for a certain price per thousand.

J. P. Nelson, of Ponca, Neb., will move his plant to Chamberlain, S. Dak., organize a stock company and sell one-half of the stock. The Commercial Club is now arranging for the site.

The plant of the Lake View Brick Co., at Lorain, Ohio, has been sold to H. G. Monon and others of Toledo, Ohio. They have taken possession and contemplate a number of improvements.

The broken brick and bits of the old Normal School at San Jose, Cali., which was destroyed by the earthquake, are being crushed to be used for the construction of a foundation of the new structure.

J. H. Spear, formerly general manager of the Washington Brick, Lime & Mfg. Co., Spokane, Wash., has been elected president of that enterprising company and C. F. Redfern, secretary and treasurer.

Since it has been announced that work is to be started on the Indiana Clay Products Co.'s plant at Jasonville, Ind., a movement has been started to establish another at the P. Fry mine in the southeast part of town.

The Mount Bethel Brick Co., Somerville, N. J., has been incorporated with \$25,000 capital stock. Incorporators are Edward D. Cronin, 889 Union St., Brooklyn, Fred Knowlton, 638 E. 139th St., New York, and Russell H. Osgoodby, of Somerville.

The Almer Brick & Tile Co., Caro, Mich., has been incorporated and will take over and enlarge the old Montague

plant there. The capital stock is \$10,000. Fred Monti is president, P. J. Peterson secretary and manager and Floyd Allen, treasurer.

The George F. Weaver Son's Co., Utica, N. Y., have purchased thirty additional acres of clay land adjoining their property upon which were eight kilns and four brick machines. They have also added a steam shovel so they can now make 16,000,000 brick annually.

The Adamantine Brick Co., of Denver, has been incorporated with \$100,000 capital stock and have purchased the Shale Brick Works at Boulder, Colo. They will add new machinery and kilns. The incorporators are Ralph M. Brann, W. T. Dumbleton and Gurnsey Walker.

The Dallas Brick & Supply Co., has been organized at Selma, Ala., and will operate the plants of the Selma Brick Co. and the Kahn Brick Co.; both will be enlarged. Nathan Kahn is president, J. S. Lamar vice-president and F. M. Stillwell, secretary, treasurer and general manager.

The Pacific Coast Silica & Clay Co., Portland, Oregon is negotiating for the purchase of a site suitable for a factory. The company is incorporated under Washington laws with \$500,000 capital stock and holds 900 acres of land on Columbia River, which contains extensive deposits of silica.

The Crawfordville (Ind.) Shale Brick Co. has been incorporated with \$25,000 capital stock. Directors are John F. Ferguson, George B. Luckett, Joseph C. Herron, John A. Gilbert and James E. Evans. They have taken over the old Evans & Ferguson plant and will operate and improve same.

## SAVES \$2.00 A TON

### AND GET THE BEST AND CLEANEST COAL

**BUY DIRECT FROM THE MINES  
DIRECT FROM THE MINES TO YOU**

We mean just what we say. **YOU**—every man who burns coal should write and find out our great Twentieth Century Method of selling coal direct from the Mine to the **MAN WHO BURNS IT**. This coal is shipped direct from the spot where it is loaded into the cars to you. There is no extra switching of cars, no handling by jobbers and no shoveling off the cars and into the bins, and then out of the bins again by your local dealer. The coal goes in a free-line from the Mine to you, and you save all of the profits that the coal trust awards to the jobber and the dealer. This money you put right into your own pocket.

## A TON OF COAL FREE

To the man who first introduces among his neighbors our wonderful plan of selling direct from the Mine to You.

Every reader of this journal is given an opportunity to secure a ton of coal free, and at the same time he saves his neighbors and himself \$2.00 on every ton of coal.

Write at once—today—and learn all about our wonderful method of saving you all of the profits and our methods of getting you out of the clutches of the Coal Trust. Remember, every reader of this journal who answers this advertisement has an opportunity of getting One Ton of Coal absolutely Free. If you ever burned a ton of coal in your life—if you ever expect to burn coal—you should answer this advertisement at once.

**It Means Dollars to You**

**HARMAN COAL CO.**

Old Colony Bldg., Dept. 285, CHICAGO, ILLINOIS

## CLAY RECORD.

**WANTED**  
Superintendents brick manufacturing plant; estimator, fire-proofing, salesmen, brick and sewer pipe, salesmen, terra cotta, bookkeeper, manufacturers, private secretary to manager, salary, \$1500 to \$4000. Other positions in our 12 offices open. Write for full particulars.  
300 Broadway, New York, or  
1010 Hartford Bldg., Chicago.

**FOR SALE**  
One power Press, in number one condition, used only half a short time; capacity 1000 per day. Ask for full particulars.  
American Hummel Brick & Tile Co.  
1 Madison Ave. New York

**FOR SALE CHEAP**  
Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine fireclays, capacity 2500 to 3000 per hour. Greater bargain. Write for particulars.  
GREAT EASTERN CLAY CO.  
39 Cortland St., New York.

**FOR SALE**  
Three two-press Whitaker pressed machines. Each machine is complete with counter shaft and ready to run. Condition good.  
One single press Whitaker machine, all complete and ready to run. These machines are for making pressed brick. Condition good. Russell price.  
6200 soft pine pallets, each 30 inches long, 8 inches wide and 1 inch thick. Your pick of these pallets for six cents apiece per 1000.  
We also have several engines and boilers, heaters, pumps and connections.  
THE COLLABORATIVE PUMPHOUSE CO.  
304-306 Huron Bldg., Columbus, Ohio

**WANTED**  
We want to find a market for a large deposit of kiesel. We have other valuable clay for quenches, pottery, terra cotta and high class brick.  
Address, Chamber of Commerce, Room 117, Astoria, Oregon.

**BRICK PLANT FOR SALE**  
Consisting of 60 acres of land without top soil, perfect drainage, situated midway between Baltimore & Washington with necessary railroad facilities. Plant was just destroyed by fire. Two still mud machines, new steam plant, 30 tonnel hot air drier with 1000 lbs. capacity and kilns remaining intact. Large house containing 8 rooms for superintendent. Purchaser could make this a modern fully equipped two machine plant for a little money.  
Address: C. B. Clay Record, 30 Dearborn St. Chicago, Illinois

**FOR SALE**  
One Two Mould Simpson Dry Press Brick Machine.  
One 4 ft. Iron Frame Dry Press.  
One No. 6 Brewer Combination Brick & Tile Machine with all necessary dies and cutters.  
One Clay Distributor.  
One Clay Elevator.  
One Tile Elevator.  
O. W. DUNLAP  
Bloomington, Ill.

**WANTED**  
By Large Clay Working Machinery Manufacturer a man thoroughly conversant with clay working and also experienced in office work and sales department. In reply state experience, salary expected and give references. No one but first class man need apply. Address "R" care this paper.

**BRICK PLANT FOR SALE OR LEASE**

Containing 60 acres of land, good clay without much top soil. Good drainage, situated one mile from S. A. R. Rail Road at Vasa, N. C., with good train road to larger.  
Equipped with 40 H. P. Engine, One 10 H. P. Boiler, One Press Brick Machine with other machinery, complete for making stiff mud brick. One good house for manager. One large barn with other buildings for help.  
Will sell very cheap on account of death of our former manager. Sooner than buy.  
Address S. B. T. Care Clay Record, Chicago, Ill.

**FOR SALE CHEAP**  
One "Hummer" Combined Brick Machine. Capacity 30,000 to 30,000 standard size brick per day. One Williams Distributor. Increasing capacity reason for selling. Address.  
OKMULGEE COAL & BRICK CO., Okmulgee, Okla.

**POSITION WANTED**  
Young man desires a position as Superintendent or sales manager, understanding stiff mud and dry press processes. Has traveled extensively.  
TRAVELLER, care Clay Record, Chicago, Ill.

**WANTED**  
To buy or lease brick plant. One making mortared or gray face brick, no fire brick preferred. Or would buy interest in and take management of company. Address.  
C. A. M., care Clay Record, Chicago, Ill.

**FOR SALE.**  
  
Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.  
THE ATLAS CAR & MFG. CO.,  
Cleveland, Ohio.

**FOR SALE**  
Brick Tile and Brick Plant, including sheds and kilns and 3 acres of land with a 10-ton elevator. Or will sell machinery consisting of one 40 horse power boiler, one 50 horse power engine, one J. B. State Machine with dies to 12 inch, one Raymond Disintegrator, one bending Automatic Tile Table, one 8-in cut Brick Table and dies, one elevator, Casts, Trucks Wheelrains, etc. Address.  
Mallow & Long Nema Ohio

**FOR SALE CHEAP**  
An H. M. Power Combination Brick and Tile Machine No. 2 Good as new, guaranteed. All dies from 7 in to 12 in included. Also brick and hollow block dies.  
Address, REDFIELD BRICK AND TILE WORKS, Redfield, Iowa.

**BRICK AND TILE PLANT FOR SALE**  
At Carthage, Ill., Hercules soft mud brick machine, 1000 lbs. capacity. Also a machine for making tile and stiff mud brick, machinery, sheds and kilns in good repair; 25 H. P. engine and 30-H. P. boiler, new, ready to run.  
W. E. LYON & CO.,  
Carthage, Ill.

**POSITION WANTED**  
Position as experienced and practical brickmaker as superintendent of a stiff mud or dry press brick plant. Experience in burning brick and care of kilns and machinery. Address.  
W. E. care of Clay Record, Chicago, Illinois

**FOR SALE**  
One Kells Brick Machine (one No. 1) disintegrator for Horton Co. make. One Semi-automatic sole cut cutting table Wallace Co. make. One 40 horse power Gasoline Engine. Seventy five bricks mould. All in good condition. Address.  
W. H. Vanler Hayden  
Ionia Mich.

**FOR SALE CHEAP**—New and re-laying rails, 12 16, 18 and 20 pound. For prices, address  
ATLAS CAR & MFG. CO.,  
Cleveland, Ohio.

**WANTED**  
A position as a Brick burner in a Dry Press or Paying brick yard. Have had much experience and can show good references.  
Address: A. E. 292 1/2 3rd Ave.  
Rock Island, Ill.

**CASH FOR YOUR BUSINESS OR REAL ESTATE**

If you want to sell send me full description and price. Confidential. Established in 1884, I bring buyer and seller together. If you want to buy, sell or exchange any kind of business or real estate anywhere at any price, address.  
FRANK P. CLEVELAND,  
1725 Adams Express Bldg.,  
Chicago, Ill.

**WANTED**  
Second-hand Smooth Roll Clay Crusher with capacity for 15,000 to 20,000 brick per day. Must be in first class condition. Give full description and writing. Address.  
H. D. SHANNON, Shellburg, Iowa.

  
No better made, not iron  
30 of 30 lb.  
4 Wheel, \$15.00  
8 Wheel, \$23.25  
Bolted by still deacons  
H. A. HART, 41 White St., BATTLE CREEK, MICH.

**SUPERINTENDENT WANTED**  
A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT.  
Care Clay Record, Chicago, Ill.

**PLANT FOR SALE**  
Very valuable Brick and Tile property on James River, Va. complete stiff mud plant, 25 thousand capacity, practically new. Brand new soft mud outfit, including steam drier, 50 thousand capacity, automatic conveyors, new and commodious dwellings. Also a better equipped yard in the state. 20 acres or more plastic red clay, admirable for brick and drain tile. Eight rapidly growing cities furnish market for bricks, net \$7,000 per kiln. Practical monopoly of best market in U. S. for drain tile to net \$5.00 per thousand for 4 inches. Immense demand and no factory in 200 miles. Cheap fuel and labor, can operate with steam drier year round. Improvements have cost \$10,000 but I am not a leech-maker and to the right party will sell low and easy payment.  
Lock Box 5 Williamsburg Va.

**FOR SALE**  
Boiler, 70 tubes, 3 inches, 15 feet long by 46 inches horizontal.  
2 Steam Gang Tempering Wheels, complete.  
1 Post Disintegrator, 30 inch rolls.  
1 American Clay Manufacturing Co. Brick Slide Cutter 12 inch.  
1 Cattel Single Die Steam Press, 15 M daily.  
1 J. B. Steele & Sons Brick Machine, Automatic 100 M.  
1 American Clay Mfg. Co's No 10 Brick Machine, Automatic Rotary 30 M Slide Cutter or End Cut 18 Brick capacity, 1000 lbs. daily.  
1 Chas. Roberts Automatic and Cutting Machine, 50 M.  
1 Chas. Roberts Automatic Pressing Machine, 50 M.  
1 Richardson Double Die Press, made by Ohio Ceramic Co.  
1 Martin Drag Belt Conveyor, 35 feet long, 18 inch belt.  
1 Clay Bank Brick, 12 inch 8 Chas. Harbarnes.  
12 Trunk Cars, 10 ft. long.  
1 30 horse power slide Valve Engine.  
1 Kells-Richerson Hot Air Pump.  
1 Carl Rode.  
1 Davidson Pump 2 inch discharge.  
Address  
CARE OF CLAY RECORD  
Chicago, Illinois

**FOR SALE**  
One No 2 Potts & Co Clay Disintegrator. Used only six months. Address.  
C. MOLFISIBI, JR. SONB  
Aurora, Illinois

**FOR SALE**  
Have 30 acres of fine clay land. Railroad right of way to Adjoining city limits. No brick works within 100 miles. Brick results at \$15.00 thousand. Would like to combine with some one who is interested in starting a brick plant who is looking for a location.  
T. H. Cox,  
Chamberlain, S. Dak.

**FOR SALE**  
Will sell brick plant that can manufacture Common Hollow and Veneering Brick. Depth of clay is from 40 to 60 feet, and all good clay, good in good order and is situated in the Twin Cities.  
Address O. B. Care Clay Record, Chicago, Ill.

**SHALE CLAY FOR SALE**

Have bed of red, chocolate and blue shales exposed full length of 3500-foot railway out and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow block, brick, paving block, tile, sewer pipe, on river. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Urban Railway Co.  
Des Moines, Iowa.

# CLAY RECORD

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Single Copies, - 10 Cents

## THE LIFE OF PORTLAND CEMENT.

By G. G. and A. J. Wheat, Emmetsburg, Iowa.

Gentlemen, before entering at all upon the discussion of the main subject we wish to ask you to approach it with us, to get the same spirit we have in making this inquiry. The various cements in use, common lime, stucco, all the hydraulic cements, and a Portland cement, are indispensable

it holds in place. Portland cement is, aside from white lime, the most useful and common cement.

The great usefulness of Portland cement has brought it so to prominence that its qualities have been vastly overrated by those who have not inquired into the nature of the cement and its action under various conditions. Portland cement has been used for any and every purpose that the maker of cement using machinery could devise and induce some would-be manufacturer to begin making.



Pieces of Cement Pipe only Partly Destroyed by Action of Natural Sewer Gases, Replaced by Vitrified-Clay Pipe at Oshkosh, Wis.

to the builders and the engineer, and in turn are, of course, indispensable to the maker of bricks and building shapes of burnt clay. If the builders need to learn one thing today it is the production of the mortar that is as strong as the brick

\* Read at the Iowa Brick and Tile Association meeting held at Des Moines, Ia., and later at the National Association meeting held at Columbus, O. The most important convention paper of the year.

Now, we wish to be understood as the most loyal friends of Portland cement, fully recognizing its great usefulness and the debt we owe it. We will try to pay the debt we owe cement by showing its true nature and helping it to be understood, that it may not be abused by being used for wrong purposes. Portland cement is so great a friend of the brick

## CLAY RECORD.

maker that he cannot afford to stand by and allow it to be used for purposes that must inevitably bring it into disrepute.

We will proceed at once to the nature of Portland cement by making a short study of how it acts under the various conditions of use. A study of the facts and phenomena of the lasting, and also the disintegration of the ware made



Fig. 1—The Passing Away of a Cement Fence Post.

with Portland cement as a matrix or bonding material. While there are various combinations of grog and cement bearing various names we will class them all under the name of concrete. Five years ago Dr. Nicholas Knight of



Fig. 2—Showing the Disintegration of a Cement Curbstone.

Cornell College called my attention to the hardness of rain-water in a certain cistern. He suggested that the cement made the water hard. I contended that the leakage of ground water into the cistern was taking place through

some crack in the wall. In investigation found no cracks but the cistern would not stay dry when pumped dry. The cistern was re-coated with cement and the hardness of the water ceased. Prof. W. H. Norton of the Iowa Geological Survey calls my attention to his cistern, a 200 barrel cistern made in 1894, which was in high dry ground on a sidehill. All the water had leaked out. He sent workmen to look for cracks. They found none, and he himself examined the wall, finding it somewhat open and porous. Since recoating it has retained the water. This cistern lost its contents at about nine years of age. Prof. Norton had another cistern, 87 barrels, shallow, left continuously open to the air; made in 1887. This cistern is still good. It is right beside the first one mentioned but it has never leaked. Being open to the air and stagnant water, slime or fresh algae, have so closed the pores of the mortar that disintegration has not taken place. Multiplied instances of cisterns are not necessary, any builder of cisterns will furnish you plenty of evidence.



Fig. 3—The Cement has Disappeared from the Face of this Wall.

## CEMENT POSTS

Mr. Parsons, secretary of our company at Emmetsburg, tells me of a Panora druggist's experience with cement posts. This druggist began farming his own farm. His first improvement was to surround the farm with cement fence posts. At the end of nine years the fences would no longer stand, many of the posts having crumbled almost entirely away, others having broken as soon as they had grown weak. I here show you a photograph made yesterday morning of cement fence posts at 1425 Capital Avenue.

## CURBSTONES

At the foot of Capitol Hill I also yesterday morning made this photograph of a curbstone. You will notice that part of the curbstone is still good; but where the angle is turned all that you can see is the pebbles, and these can be easily brushed from the face of the curbstone, as the bond of ce-

ment is almost entirely destroyed. This angle is the inside angle and no wheels could strike it; nothing but the weather has worn it away.

Examine with me a moment these blocks in a small office within five minutes' walk of this convention. You will no-



Fig. 4—A Closer View of the Same Wall

tice the upper part of the rock face of each block shows light colored. The lower slope still remains dark, giving the effect of light and shadow. When I first examined this building I was deceived into thinking this was light and shadow, but as there was no direct sunlight, I saw it could



Fig. 5—This Illustration Shows the Dissolution of the Poorer Part of this Water-Table. The Material was Imperfectly Mixed and the Poorer Part Dissolved First

not be so. The light color is due to the exposure of sand and gravel, all the cement having disappeared. The sand can be easily brushed off and in fact, a small line of sand which has fallen from the face of these blocks lies on the

pavement at the base of the wall. Two years ago, at the time of the brick-makers' Convention, I personally examined these same blocks in this building, and had no fault to find with them except that six per cent of them were broken squarely through in upright cracks. These slides will show you the effect of weathering upon the cement water-table of the Emmetsburg court house. (Fig. 5, 6, 7 and 8.)

Let me mention now a fence which Mr. Omer Smith can tell you more of later—and I trust he will. The bare facts are these: Thirty years ago a certain man in an Illinois town built an ornamental fence of Portland cement work. Fifteen years ago Mr. Omer Smith examined the fence and listened to the praises given by its maker. Fifteen years later, or this summer, Mr. Smith could no longer find the fence, but could find evidence that it had rotted away.



Fig. 6. In the Corner Where the Water from the Rain Pipe has Leaked, the Water-Table is Dissolved Away.

The use of concrete construction sea-walls, piers, dams, and all manner of massive construction whose face is continuously washed by water, gives many instances where the concrete has steadily lost its cement and has eaten back under the action of the water and the frost. To be on the safe side, the maker of the sea-wall is obliged to face the wall with brick or granite between the high and low water mark, in order to insure lasting. Many instances of cement lasting for decades in sea-wall construction can be found. Other instances, under apparently similar conditions, have been found to show rapid disintegration. The growth of barnacles and sea slime and vegetation will protect the wall when conditions are favorable to such growth.

Examination of the faces of these walls which I have shown you photographs of show that in each case the gravel and sand particles have retained their original integrity, and have not changed; while the cement has been eaten away or worn away. Pebbles are found projecting nearly their whole length from the face of a curbstone that was originally a smooth surface of cement and sand. Unquestiona-



## CLAY RECORD.

bly the body of the concrete has been disintegrating by the loss of the bonding material or matrix in a manner similar to the disintegration of soft sand stones which have for their bonding material a calcareous crystallization. This photograph will not show very clearly this disintegration of sand stone, as the particles of sand are so small; but every Iowan could well wish that no such material had been used in the construction of the stairways and balustrades that lead to our Capitol Building. This stone could not again secure recommendation by architects for use in a like place.



Fig. 7.—This corner of the Water-Table is Dissolved Away. In Storms, there is an Excess of Water Driven by Sidelong Winds into the Corner.

In this sandstone we see the same phenomena of breaking down that we observe in the breaking down of concrete. Calcareous or lime bonding material slowly disappearing, and the more lasting parts falling apart as the matrix disappears. In each case the cause is the same; the weathering away of the bonding material under the action of the water, aided in the final breaking down of the stone by the expansive power of frost.

Water has broken down and washed or carried away the matrix. Applying the idea that water can, after a time, reduce the amount of cement in the concrete, let us turn back to the cisterns a moment. They are good for perhaps six to ten years; then the water gets hard or leaks out, or else the cistern refuses to go dry, as mentioned before. If the wall has become porous with age and the water can filter through, then the ground water of a higher level than the cistern water is will filter in and level the cistern water up to its own level and keep the cistern full and act just like a well. Or, again if the wall has become porous and the cistern is located in high dry ground or gravel, the cistern can leak out all its contents.

Now, gentlemen, if water has power to reduce the amount of cement in cement mortar, water will do it in the cistern, and gradually make the wall porous to the flow of water.

Inasmuch as we find in the study of cisterns that all the phenomena of filtration through the walls does take place in

old cisterns, we in turn have partly earned the right to say that the water has actually at last made the wall porous and pervious to the flow of water.

This same method of breaking will apply to the final breaking down of the cement fence Mr. Smith tells us of. The slow reducing of the total amount of the cement in the body of the fence and the weakening of the strength of the matrix, finally place the fence in the same condition of the wonderful one-hoss shay; and when it goes it goes all to pieces.

Now, gentlemen, we will not further multiply examples or go farther in deduction from the facts and phenomena to the cause of the whole. We have reason to believe that the cement is carried away by water. To determine this might require extended chemical and physical laboratory tests. The most obvious explanation of the problem appeared to us to be that cement was soluble in water; that is, it would actually dissolve, like sugar or salt.

But before going to the laboratory to make our tests, let us examine the action of cement in setting. The contention of many users of cement and many civil engineers, that cement grows harder all the time, and the facts maintained and explained by chemists and other competent men, that concrete work increases in strength for at least six months after it is brought into contact with water and begins to



Fig. 8.—Another Example of Breaking Down at the Corner. There is but One Good Corner out of Six in this Entire Water-Table.

hydrate or set, opens another fruitful field. If cement does grow stronger for six months, then it is not completely set for six months' action by the water, and at no time during that six months is the cement at a state of rest. If it is not at rest for this six months, what process is taking place? Vol. 15 of the Iowa State Geological Survey in discussing the process of Portland cement in setting says: "Each tiny particle of cement is enveloped in water, and a very thin layer of the surface of the particles pass into solution and then the particles of cement crystallize together or to whatever grain of sand they may be in contact with."

Now, if this be the correct explanation of the process of Portland cement in setting (and we have no reason to question it), then we have but to consider that the process of solution and crystallization continues until it is complete, and not only a thin envelope of the surface of each tiny particle of Portland cement has been in solution and then crystallized, but the entire body of the tiny particle, and each tiny particle has passed through this process and the crystallization is complete.

Now, gentlemen, we have been discussing cement and reasoning toward the point where we can say that the cement is actually soluble in water; but with all our reasoning and evidence, there yet remains the positive proof of the chemist's analysis and his scales. Accordingly we took properly cured cement tile six months old, hard and strong almost as a clay tile, sent this to Dr. Knight at Cornell College, Mt. Vernon, Iowa, to be tested by soaking in pure water, containing no solids at all, and then making analysis of the water. Also to be tested by using water whose per cent of solid matter was known, and determining whether additions of solid matter were obtained from the cement tile. These results were obtained. Seventy-three grams of the

determinations were made, using the city water as the solvent. The city water contained carbon dioxide and .0749 grams of solid matter in 200 centimeters. Seventy-four hours at soak in the city water dissolved .0039. Ninety-six hours in the city water .0320 grams. Each of these results show that the tile dissolved more slowly in the city water than in the distilled water.

The results were so startling and so strongly confirmed the conclusions which we had previously reached, viz., that cement was quite soluble in water, that we at once started other similar tests at Urbana, Ill., and further tests at Cornell College, Ia. The tests confirm the first results and the solubility of Portland cement is by these examinations established beyond any successful controversy.

A great deal of unprofitable discussion might be indulged in by those who would question the value of the work we have just shown,—discussion as to whether a solution is a chemical or physical process and as to how this really affects the durability of concrete work. We would jump right over all hair splitting discussions on this point, and state this proposition. That Portland cement is soluble in water, once, and being soluble once is soluble an infinite number of times, and also state that cement when perfectly set is not at a state of rest, and is not a constant, but it will continue to change under the action of water.

Now these facts about the nature of cement bring us to an application of this knowledge in governing us in the use of cement for construction purposes.

Obviously there are any number of uses to which cement can be put, and classes of work which cement can be used for without the foregoing facts in any way forbidding. The fact of solubility of cement does not forbid its use in underground foundations, footings, piles under ground, or in any massive construction where the work is not exposed to a continuous change of water across its face. Cement may be used successfully in construction of massive bridge abutments, piers, etc. Yet a question remains always whether



Fig. 9.—Showing the Weathering Away of Sandstone, Similar to that of Concrete

tile was soaked in distilled water for 72 hours. The water was then filtered and 200 centimeters, or about 7 ozs. was evaporated to dryness in a weighed platinum dish. A careful drying and weighing showed that .0325 grains had dissolved. At this rate the tile, were the entire 72 grams pure cement, would dissolve in about 18 years, but since not more than 1-5 of the tile was cement the entire amount of cement in the tile would be dissolved in about 1-5 of the 18 years. An analysis of this solid matter showed the following: silica, .004 grams; iron and aluminum .0014; calcium, .0085. No magnesium was found but a qualitative analysis showed the presence of sulphates, but these were not determined. These sulphates and carbon dioxide would in all probability account for the loss of weight between the original amount of .0325 and that of the silica, iron and aluminum and calcium. Again the same piece, 73 grams, was left to soak for 95 hours in distilled water and 185 centimeters evaporated to dryness showing that .0390 grams had dissolved. The rate of dissolving continued almost the same. Two more similar



Pieces of Cement Pipe Entirely Destroyed by Natural Sewer Gases, Replaced by Vitrified Pipe at Kenosha, Wis.

a facing of superior material will not greatly better the construction and lengthen its life.

The question of where cement shall be used or rather how long it will last in any certain class of construction, is purely and simply a question of balances. How rapidly does the cement disappear and how long will it take to remove the cement under the conditions it must meet?

Passing now any number of interesting and fruitful fields for investigation we will bring the discussion toward its major object, and we wish that the members of this Association may so thoroughly realize the gravity of this object that co-operation may be secured to bring the real truth before the people of the State of Iowa in a proper manner.

No class of construction for which Portland cement is

## CLAY RECORD.

used subjects it to more severe tests than its use making drain tile. Nothing more severe than to subject a thin 9-16th inch well of five to one, or even seven to one concrete or cement tile, to the continuous passage of as great a volume of water as can come in contact with it, for 24 hours of the day and 10 or even 12 months of the year.

And I wish to speak further, using the words of several leading makers of cement tile, "more water will pass through a cement tile wall than any other kind of a tile wall." I make no comment except to add that the tile wall is very porous and will undoubtedly remain very wet, and if it drains the land a continuous change of water passes over it—chemists know that the motion of water or any liquid increases the rapidity with which any substance is dissolved by it. What is bound to be the inevitable result? This thin tile wall will in a few years lose all its cement and the ditch of drain tile will become a little streak of sand running through, where the drain tile ditch originally was, and it is closed up.

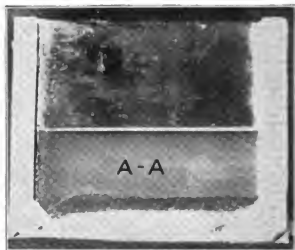


Pieces of Cement Pipe only Partly Destroyed by the Action of Natural Sewer Gases, Replaced by Vitrified Pipe at Kenosha, Wis.

Gentlemen, let me state what others have stated before. To make a cement tile rich enough with cement to be good is too expensive, and puts good cement tile out of the question. I will not stop with stating this, but add our own statement, which is the inevitable conclusion that follows the facts presented in this paper. There is and can be no such thing as a good cement drain, even if it were all cement it would dissolve and carry away in one generation, provided that the ditch would remain open until the last vestige of cement would be carried away in solution. But every one can readily see that long before all the cement could all be carried away individual weak tile would crush in or places where heavier pressure were subjected to the tile than at others, would break down. The ditch will begin to close and obstruct in a very few years, with the result of a total final loss of any power to drain the land.

Gentlemen, we need not to discuss further the foregoing. Multiplied proof is not needed. One demonstration in the chemical laboratory is determinative and final, but we have been careful to confirm by doing the work over several times. What is more practical is to turn to the subject of county ditches and how cement use in these threatens the drainage of the entire north half of Iowa. Many men more competent to speak on this are here today, whom we hope you will hear from, but in closing we wish to add our testimony, that our observation shows that county ditch estimates are being figured on the basis of cement tile prices in

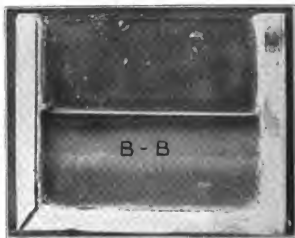
the larger sizes of tile 12" and upward. The bids of strong, able contractors, who would use vitrified clay tiles that would outlast the pyramids, contractors who would be responsible if their product failed to do the work, contractors who would and do put through what contracts they get on schedule time, and in first-class manner, are being refused contracts all over the northern part of Iowa, and what few con-



Shadowgraph No. 1.

tracts are let in many counties are let to men who use cement tile.

This menace to the welfare of the State, the welfare which we all labor hard to advance, this menace we should remove, and we believe that proper co-operation to secure a thorough spread of the knowledge of the truth, will soon remove entirely this danger that threatens the land owners and tax payers of the State.



Shadowgraph No. 2.

Shadowgraph No. 1 shows the calcium or lime which was dissolved out of about 2 oz. of portland-cement tile soaked in 7 oz. of chemically-pure, distilled water for 96 hours. The white cloud at AA shows the calcium.

Shadowgraph No. 2 shows the calcium dissolved out of about 2 oz. of portland cement tile soaked in 7 oz. of rain-water, chemically free from calcium before the tile was placed in it. The white cloud at BB shows the calcium. An equal amount of calcium remains in the lower part of the liquid. The chemical seagent has not yet reached it to precipitate it.

**RESULT OF GOVERNMENT FUEL TESTS**

The results of the work done at the United States fuel-testing plant at Forest Park, St. Louis, from January 1, 1906, to June 30, 1907, are presented in a report just issued by the United States Geological Survey as Bulletin No. 332.

**CHARACTER OF TESTS**

The scope of the work during the period covered has been largely restricted to a series of comparative tests made under conditions as nearly uniform as possible on bituminous coals and lignites selected from different fields of the United States as representative of known extensive deposits. Chemical analyses were made of samples of these fuels collected at the mines by United States inspectors sent out for that purpose, and also of samples taken from the cars, from the fuel as fired to the boilers as fed to the producers, before briquetting, before and after washing, and before coking. Samples of briquetted coal and coke were also analyzed, and the results of the entire series of analyses and tests are presented in the report.

The tests to which the fuel samples were subjected comprised steaming tests, to determine the calorific value of the fuel and the relative amount of energy it will furnish when used under a boiler in connection with a steam engine as compared to the energy obtainable from the same fuel when used in a gas producer and gas engine, and also to determine methods of burning fuel without smoke and in such a manner as to secure the highest efficiency in the combustion chamber; washing tests, to determine the possibility of improving the coal by washing and the availability of such washed coal for the production of coke; coking tests, to determine the possibility of utilizing the various coals in this way or of improving coking practice; briquetting tests, to determine the extent to which slack or waste coal can be economically made into briquets; and steaming tests on briquets, to determine the relative and absolute efficiency of this form of fuel as compared with that obtained with other forms.

**PRODUCER GAS TESTS**

The producer-gas investigations have continued to show the availability of bituminous coals and lignites and peat rich in volatile matter for the production of power, and have also indicated the lines along which improvements in gas-producer construction might reasonably be expected in order that the producer may utilize advantageously all varieties of bituminous coal, and especially low-grade fuels they are now being wasted.

**BRIQUETTING**

The briquetting plant has developed new possibilities in the utilization of slack coal and anthracite culm as an efficient fuel for use on locomotives, both in express service, where a smokeless fuel is required on entering large cities, and in heavy freight service, where high efficiency in hauling over steep grades is required for a limited period. Experiments are now being extended with a view to determining the value of briquetted coal for use in the naval vessels of the United States.

**PAPERS INCLUDED IN THE REPORT**

The report comprises an introduction, by Prof. J. A.

Holmes, who has charge of the technologic branch of the survey's work; an account of the field work, by Messrs. Edward W. Parker and J. Shober Burrows; the work of the chemical laboratory, by Mr. N. W. Lord; steaming tests, by Mr. L. P. Breckenridge; producer-gas tests, by Mr. Robert H. Fernald; washing tests, by Mr. G. R. Delanater; coking tests, by Mr. A. W. Belden; cupola tests on coke, by Mr. Richard Moldenke and briquetting tests, by Mr. C. T. Malcolmson. The results of tests are arranged by states. All the work of the various plants is now directed from the Washington office.

**TRANSFER OF PLANT**

The plant at Forest Park was dismantled in March, 1907. The sections of steam, producer gas, and briquetting were transferred to a new plant erected at Norfolk, Va., and those of coking and washery were transferred to a new plant at Denver. The principal chemical laboratory of the fuel-testing plant has been removed to Pittsburgh, but a branch laboratory will also be maintained at Norfolk for the purpose of experimenting on the gases in different portions of the combustion chambers of steam boilers and of gas producers. The smoke-abatement investigations at public buildings will be supplemented by more detailed experiments at the Norfolk plant.

**SHIP BRICK ON THE HENNEPIN**

The Tri-City Sandstone Brick company is planning to ship brick by water from its plant in Moline, Ill., to Geneseo, Tiskilwa, Sterling and other points on the Hennepin canal and feeder. W. H. Crume, general manager of the company, believes that a considerable reduction, one-third or more, in existing freight rates can be secured by use of the water route. It is probable that if Mr. Crume finds he can make the arrangements for water shipping that he desires, other firms shipping heavy, perishable product, sand particularly, will also take up the use of the canal.

The Sterling and Rock Falls Navigation company recently purchased the former Moline steamer Beder, which is to be used, it is understood, in connection with a barge line between Rock Island and Sterling. The Tri-City Sandstone Brick company has in the past done a considerable business in cities reached by the Hennepin, and if proper arrangements can be made, will ship by the Beder to customers in that territory.

The existing freight rates from here to all points on the Hennepin are the regular Illinois "distance" tariffs. For example, a small car from Moline to Sterling is charged at about \$30. On one barge of ordinary size between 40,000 and 50,000 brick may be loaded. This is three times as many as can be loaded in a small car. A barge can be sent from Moline to Sterling for much less than \$50, especially if three or four barges is handled by one steamer. With the necessary changes this applies to all classes of bulky, perishable freight.

The brick company would load its produce on barges at the foot of Sixteenth street, where its plant is located, the loading if anything, being easier than into freight cars. From there the barges would be taken to Rock Island through the lock and then to destination on the canal or feeder.

### ECONOMICAL AUXILIARY POWER APPLIANCES

By W. S. STAFFORD, M. E.

There are many devices on the market to-day, calculated to save time, labor, fuel, etc., and if we were to adopt them all would, according to advertised claims, get our power for nothing. This point is well illustrated by the experience of a salesman selling a patented stoking device, who told an old time brick-maker that if he would adopt the same that he would save about \$2.00 on the cost of burning a thousand brick. The brick were at that time costing approximately \$1.90 per thousand to burn. Some claims made for money saving devices are just as absurd. However, there are many valuable contrivances now being sold that no up-to-date power plant should be without. Some are for the purpose of reducing operating cost, while others are intended to increase the efficiency of the plant.

#### OIL SEPARATOR

An oil separator is very necessary in any power house where the exhaust steam is utilized for heating the feed water; used for heating system or for manufacturing purposes. It is a fact that most good feed water heaters are fitted with oil separators, but usually they are not as effective as an independent apparatus would be. Too often the capacity of oil separators is greatly over estimated, and as a consequence, results are not satisfactory. To thoroughly separate the oil from the exhaust steam, every particle of the latter must come in contact with a metallic surface. An ordinary pipe will act as an oil separator in a small way, but only that steam coming in contact with the sides of the pipe is purified, the balance blowing through the center of the pipe, impregnated with oil as a result of not having been in contact with a metallic substance. Satisfactory results cannot be obtained from an oil separator unless it is of sufficient capacity.

#### FEED WATER HEATER

The saving and efficiency effected by the use of a good feed water heater in a power plant is most important. There are two types of heaters; open and closed. The former is by far the most popular and unquestionably the most efficient. The principle involved in nearly all open heaters is the same. The water inlet is at the top and flows through a series of saucer shaped pans. The exhaust inlet being below the pans and the outlet at the top of heater, the course of both water and steam is through the same channels, the former being down and the latter up. As a result, if connections are properly made, the water is heated to 204 to 210 degrees Fahr. The greater part of the scale forming impurities in the water are precipitated on the pans instead of being pumped to the boiler. After passing through the heating chamber the water goes to the filtering chamber of the heater. Coke, hay or quartz is generally used as a filtering material. From this point the water is pumped to the boiler, and a proper screen should be placed over the pump suction to prevent any of the filtering material from getting into the pump. In some makes the filtering chamber is the bottom section of heater and the pump suction at the top of this part of heater. When this is the case, the water, already heated, should enter the chamber through a pipe extending down through the filtering material and nearly to the bottom of the

chamber. When this is done and the pump suction is placed near the top, the water is *forced up* through the filtering material, thereby insuring better results. Before entering the heater, the exhaust steam should pass through an adequate separator so that the water will be perfectly free from oil before going to the boiler. The best plan is an independent apparatus set close to heater on exhaust line. Some heaters have arrangements for the steam to pass through or over an oil separator after it has entered the heater but as this usually consists in a small series of corrugated baffle plates, it is neither satisfactory nor efficient. The oil separation should be thorough, not only on account of necessity of keeping the feed water free from it, but also if steam leaving the heater is to be used for manufacturing purposes or heating system. To keep heater as efficient as possible, frequent cleaning is necessary so that it will not become choked with dirt and sediment. In the closed type of heater the steam does not come in direct contact with the water. It is usually constructed so that the water is contained in a series of tubes surrounded by steam, or the contrary; the steam being in the tubes while the water circulates about them. This type of heater possess very few, if any, of the advantages of the open type. Approximately one per cent in fuel is saved for every ten degrees the feed water is heated, which amounts to quite an item at the end of the year. All good open heaters are guaranteed to heat the water from 204 to 210 degrees Fahr., when properly connected. In addition to the saving effected, the higher temperature does away with the strains caused by unusual expansion and contraction in pumping cold feed water to the boiler. The advantages of extracting a great percentage of the scale forming impurities in the water are obvious. This fact also effects coal consumption as well as adding to the life of a boiler.

#### STEAM SEPARATOR

The value of a steam separator is well known in most plants. It is very important that the water condensed in the steam pipe, especially long lines, should be drawn off before reaching the engine. The principle employed in most successful steam separators is the sudden change of direction in the current of steam, the momentum carrying the particles of water against the obstruction or pipe bend that causes change in course of steam. Proper provision should be made at this point for drawing off the water. It is customary in long steam pipes to place a large drum as near the engine as possible for trapping the condensed water. This drum should be of ample size to give best results. The use of a steam separator would have prevented many serious accidents caused by the drawing of water into the cylinder of the engine.

#### OIL FILTER

The purchase of an oil filter for the engine room is sometimes looked upon as an unnecessary expense, but it is surprising how many dollars can be saved by their use. Proper provision must be made for catching the used oil as it comes from the engine, or from bearings in any other part of the plant. This will, of course, contain many particles of foreign matter, which are easily separated from the oil by the use of a filter. Oil can be used over many times and the

consequent saving in a year will, in most cases, pay the cost of the filter. Most engines, especially high speed, are equipped with crank and eccentric oil guards, by means nearly all of the oil after being used can be drained to a central reservoir. It can be easily arranged so that the waste oil from all parts of the engine will gravitate to this tank, which could be located conveniently near the filter.

#### MECHANICAL STOKER

There are many types of mechanical stokers and they are all more or less successful, depending upon the conditions under which they are operating and the character of the coal used. They have been in general use since James Watt invented the first one in 1785. There is no question of the advantages of a device of this kind, but a careful study of the kind of coal to be used and other conditions, is very necessary before purchase is made. Although in late years, stokers have been greatly improved, there still exists many mechanical defects that detract from their efficiency. As stated before no stoker will work all kinds of coal successfully and your own conditions should be carefully considered before selection is made. Some power users do not hesitate to say that a *good fireman* is better than any stoking device, but this can be seriously doubted. Hand firing, no matter how carefully done, has never produced the results of a good stoker properly installed and managed. Under average conditions, from five to twenty per cent is saved by the use of mechanical stoking devices, depending entirely upon conditions. A wonderful saving, not only in coal, but in labor is effected by the use of stokers and an inferior quality of coal will sometimes, by their use, show as good results as a better grade when hand fired. With a fair quality of coal and when they are not pushed to their maximum capacity, mechanical stokers are efficient smoke preventers.

As stated before there are many devices on the market, for use in power plants, of unquestionable merit, but they do not always suit all conditions. The question of producing power economically is an important one and every detail of present and possible future conditions should be carefully considered. Every part of a power plant requires a knowledge of details and close attention to same. All the devices in the world for money saving or economical operation, lose their value when not operated with intelligence and care. A feed water heater is of no value if it has been allowed to become choked or is not properly connected; a steam separator will render no service if proper provision is not made for trapping water; a stoker will not effect a saving if not properly operated; and examples of this kind can be cited of every part; of every machine and apparatus in the power house, down to the smallest oil cup. Carelessness may be the cause of severe losses, not only in dollars but in lives. The writer once knew an engineer who always kept the crosshead and crank pins on his engine loose so that he, as he expressed it, could hear it running when he was in another part of the plant. The plant this man operated was put in as an experiment to produce power, if possible, for less cost than central station service. Needless to say it was a failure.

#### FASHIONS IN BRICK

"Nothing is more common or prosaic than bricks, which have served utilitarian ends for untold centuries, and anything like a fashion in them one would scarcely expect to find, yet such is the case. Twenty years ago, and even more recently, the finest fronts were constructed of red pressed brick, carefully gauged to size and shaded to one even color. These were laid in running bond with the narrowest possible mortar joint. This was usually of a red color to match the brick, the effect produced being a surface so uniform as to produce the appearance of a pointed and ruled wall.

"The discovery some years ago of clays that would burn brown, old gold, buff, gray and other light colors and the rapid and satisfactory development of a great industry engaged in manufacturing brick of this character, brought them into wide use. One color has succeeded another in popularity until now the prospective builder has a wide range of color to select from, almost every shade being at his command, even green and blue being obtained by the use of glazed or semi-glazed surfaces.

"With the departure from the even red color came rapid development in the matter of the thickness, color and texture of the mortar joint, and in the style of bonding the face brick to the backing-up wall, so that the construction of a brick facade today is a highly artistic proposition, capable of the best results only in the hands of a skilled architect.

"Many owners and builders still adhere to the old pointed effect, but these may be said not to have a realizing sense of the beauty of artistic brickwork. This is particularly true of the speculative operator, but even here a chance may be noted, and this will doubtless spread until brick of artistic color are generally employed even in this class of construction. The architects of the country have come to realize as a class, what the best of them knew long ago, that to be interesting, to say nothing of being attractive, a brick wall must have "life" and "texture," and that this can best be secured by the use of brick that vary considerably in color. It has further come to be understood that they must be laid with a wide mortar joint and preferably with header brick, forming a true bond into the main wall, the whole being a frank expression of true brickwork.

"This change of fashion is one of the strongest proofs that brick will continue in favor as a building material, concrete and other valuable available substitutes notwithstanding. Our building is constantly assuming more artistic forms and colors and bricks are now being made that meet all the requirements of the architect. Red brick, however, are still preferred for the stately conservative mansions, where dignity and elegance are desired."—The American Contractor.

#### PAVING BRICK MAKERS PROTEST

The controversy over rates on brick is again to be passed upon by the interstate commission. Complaint has been filed by the National Paving Brick Manufacturers' Association, which represents 65 of the largest brick-making establishments in various parts of the United States who do 90 per cent of the brick business of the country, against the Baltimore & Ohio and many other carriers.

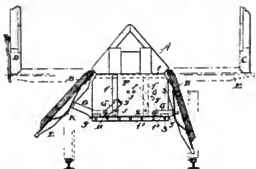
The association complains that freight charges on its products have been increased from 10 to 30 per cent, and alleges that the increase is unreasonable, arbitrary and unlawful.

# NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURERS

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

875,820. Dump-Car. Frank S. Ingoldsbly, St. Louis, Mo., assignor to The Ingoldsbly Automatic Car Company, St. Louis, Mo., a Corporation of West Virginia. Filed July 14, 1905. Serial No. 268,579.

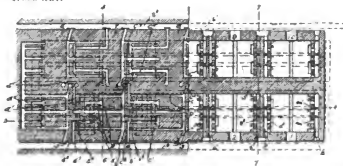
Claim.—In a dump car, the combination of a dumping door, an interchangeable bumping mechanism to receive the impact of the door and limit the movement thereof.



In a dump car, the combination of a beam, a support depending therefrom, variable bumping mechanism carried by such support, and a door pivoted to said beam independently of the bumping mechanism, but cooperating with such mechanism.

879,354. Continuous Brick-Kiln. Samuel Barnett, Tipton, and Richard J. Hadlington and Samuel Hinton, West Bromwich, England. Filed March 1, 1907. Serial No. 359,950.

A continuous brick kiln comprising two rows of kiln chambers with furnaces for each kiln chamber, a center flue extending longitudinally of the kiln between the rows of kiln chambers, side flues extending longitudinally of the kiln at the outer sides of the kiln chambers, transverse flues for the kiln chambers connected with the center and side flues, dampers for the transverse flues, a cross flue for each kiln chamber opening, at one end, into the transverse flue of the kiln chamber, at the other end, directly into the succeeding kiln chamber of the series, and a damper for each cross flue.

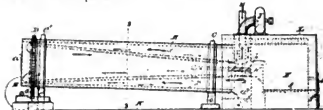


A continuous brick kiln comprising two rows of kiln chambers with furnaces for each kiln chamber, a center flue extending longitudinally of the kiln between the rows of kiln chambers, side flues extending longitudinally of the kiln at the outer sides of the kiln chambers, transverse flues for the kiln chambers connected with the center and side flues, dampers for the transverse flues, a cross flue for each kiln chamber opening, at one end, into the transverse flue of the kiln chamber, and, at the other end, directly into the succeeding kiln chamber of the series, a damper for

each cross flue, a hot air flue, a damper controlled furnace flue connecting the hot air flue with the furnaces below the grates thereof.

879,200. Drier. Karl F. Snow, Cleveland, Ohio, assignor to The C. O. Bartlett & Snow Co., Cleveland, Ohio, a corporation of Ohio. Filed Apr. 15, 1907. Serial No. 368,213.

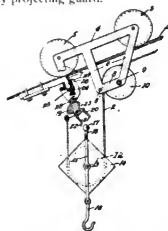
In a drier, the combination of a rotary drum; annular rings disposed adjacently thereto; and means adapted to connect said drum and rings, said means permitting relative movement of the latter and said drum during their contraction and expansion.



In a drier, the combination of two rotary drums inclined in opposite directions; elevators disposed within each of said drums; means secured to said drums respectively and supporting said elevators; and longitudinally disposed partitions dividing the space intermediate of said two drums into compartments.

879,744. Hoisting and Conveying Apparatus. John W. Cooper, Seattle, Wash. Filed May 13, 1907. Serial No. 373,507.

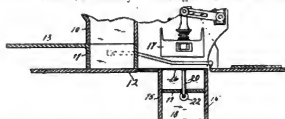
In combination with a track, a carriage mounted thereon and a hoisting rope supported on said carriage, a rotatable lock element on said carriage, said element being formed with a depression, a movable catch disposed to engage in said depression when said element is rotated, a means fixed on said element and operated by said rope to rotate said element, and a projection on said rotatable element to prevent lowering of the load, said projection having a downwardly and outwardly projecting guard.



In combination with a track, a carriage mounted thereon, and a hoisting rope supported on said carriage, a rotatable element on said carriage provided with a depression, a movable catch disposed to engage in the depression, of said element when said element is rotated, means connected to be raised and lowered by said rope, and upwardly projecting stem on said means provided with an enlargement, means fixed to said element, and operated by the enlargement on said stem during movement of said first means to rotate said element, and a projection on said rotatable element slotted to receive said stem and engage under the enlargement thereof to prevent lowering of said first means, said projection having downwardly and outwardly projecting guard means.

880,886. Machine for making Cement Brick and the Like. Fred C. Hohn, Greencastle, Ind. Filed May 31, 1907. Serial No. 376,526.

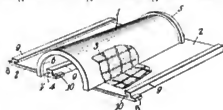
In a machine for making cement brick and the like, a revolvable mold with the sides thereof laterally movable somewhat for the discharge of a brick when the mold is inverted, a sliding hopper movable over said mold when in its upper position for charging the same with cement, a tamper operable through said sliding hopper for forcing the cement into the mold and tamping the same, a false bottom in said mold with a rod extending centrally therefrom through the bottom of the mold, a laterally extending bar on the end of said



rod beyond the bottom of the mold, yielding means mounted on the ends of said bar for frictionally engaging the sides of the mold, and means for limiting the outward movement of said yielding means so that when the mold is inverted said frictional means will be disengaged from the side of the mold and enable the false bottom to drop down by gravity to the position where it will be engaged by the top of the mold when in its upper position.

880,012. Roofing-Tile. Bertel R. Christensen, San Francisco, Cal. Filed Nov. 26, 1906. Serial No. 345,120.

A tapering semi-tubular roofing tile, the ends and edges of which are flanged, the flanges on the ends being internal and external on the larger and smaller ends respectively, and the flanges on the edges extending inward and terminat-



ing at a sufficient distance from the internal flange to form a space for the external flange of the adjacent tile

### POTTERY MAKING IN COLORADO SCHOOLS

Clay modeling, or, more properly speaking, clay building and pottery, is taught in the Colorado State Normal school because it is believed to be a factor in the education of the child, hence indispensable to those who are preparing themselves to become teachers.

How does it promote this education?

First—By giving the child something to do, affording thus a channel for his activities.

Second—By giving him a material to do with, which material, through the exercise of his or her will, working through his hands, may be transformed into things which are worth while. Thus we make opportunity for his creative faculty and we also cause a demand, quite direct, upon his power and will.

For you may handle the clay all day and it will remain a meaningless mass unless you definitely will to make it a certain thing. The child thus gains a lesson in the power of

mind over matter, and the matter, and the manner in which he is led to exercise that power becomes a factor in his moral development.

Third—Since all tangible expression approaches more nearly to the definite, thus by giving him a definite medium in which to express his thoughts, he becomes definite, for the written word "vase," for instance, is less flexible than the spoken word, the picture more preclusive than this, and the constructed form is still more compellingly definite presentation of a thought. Modeling or clay building, then, induces definite thought expression, which in turn calls for fullest observation and cultivates quick perception and in time aesthetic taste.

It develops the child's physical power, as he learns to control and direct the muscles of his hand; it gives him skill, a power most necessary to the industrial future of our nation, and at the same time the responsiveness of the clay affords an unusual channel for the spiritual translation of impressions rather than for their physical production. This refers not only to his thoughts in general, his spirit mind, but the greater abstraction which for want of a better name I will call feelings, or sentiment.

Thus refinement itself and hand-in-hand appreciation are given these most valuable factors that make for the ethical highway of a perfect soul.

It is a pleasure to see a new class start in with the work after a short lecture setting forth pedagogic and psychological points as brought out in points one to four above. The class is shown through the ceramic museum where pottery in every stage of finish of most every age and nation is on view. Then they are brought in touch with the preceding years, and now they are ready to work. By this time enthusiasm and eagerness run so high that they can hardly wait till each receives her quota of clay to proceed with the making of masterpiece Teco, Rookwood or Dalton.

The first exercises of necessity must be simple with even moral students, unless they have been fortunate enough to come from some large city like Denver, where they have been already in touch with the study of clay work, but soon the nimble fingers get control of the medium and great is the joy and many the ahs and ohs when the first piece of refined construction is held up by the teacher to be shown as an encouragement to the class. Then you should see them work. It becomes a matter of joyous competition, and gladly do the more able, the quicker students assist those whose fingers do not keep time with the will power. But head and heart and hand are in union, and there lies the strength and all produce something worth while. Already is this influence of appreciation of finer form and color felt in the state and outside.

The process of the first fire is watched by all with the greatest interest, for after this the student can handle his ware with safety, and when the first glazes are fired and good results obtained then, indeed, does ambition and joy bring that uplift which is so important an influence in the making of all good citizens. And, to conclude, while not a particle of professionalism ever enters within the precincts of this school, may it not open the portals of the avenue to pottery fame to some especially adaptable individual?—Prof. R. Ernesti.



## CLAY RECORD.

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GEORGE H. HARTWELL, EDITOR

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No. 9

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

Now is the time to advertise.

Many a man who feels big acts small.

A little flattery now and then will soften up the hardest man.

Be kind to your friends, be agreeable to your neighbors and beware of your enemies.

All the world admires a peaceful man, but it gets out of the way of the strenuous kicker.

The self-made man can see no beauty in a picture unless he finds it in the central foreground.

Probably nothing tries a lazy man more than the thoughts of what he may have to do tomorrow.

Ever notice that almost every one you talk with gives you some information that isn't of any earthly use for you.

Did you take our advice and subscribe for the CLAY RECORD? We need the money, can't you attend to it at once? The cost is only one dollar for twenty-four numbers.

## BUILDING OPERATIONS FOR APRIL

Official building reports from forty-seven leading cities of the country for the month of April, 1908, received show a marked falling off in the value of building permits issued as compared with the corresponding month of last year. Yet, notwithstanding the loss, which amounts to nearly one-third, the operations reported are still large when contrasted with those of only a few years ago. Several things combine to reduce building operations at present; the enormous amount of construction work done within recent years, which has largely supplied the demand for buildings; the unsettled conditions incident to the recent currency stringency, and the approach of the presidential election. Only eleven cities show a gain. Most notable among these is Chicago, where the permits aggregated \$6,130,850, a gain of 14 per cent. The percentage of gain in the following cities is shown by the accompanying figures: Chattanooga, 103; Denver, 171; Indianapolis, 26; New Orleans, 163; Spokane, 37; Salt Lake City, 110; Topeka, 26. The greatest loss is in New York City, which amounts to 40 per cent, or over \$10,000,000. Losses in other leading cities are: Baltimore, 46; Buffalo, 44; Detroit, 27; Grand Rapids, 51; Hartford, 34; Louisville, 43; Los Angeles, 54; Milwaukee, 38; Minneapolis, 13; Memphis, 48; New Haven, 31; Newark, 40; Omaha, 27; Philadelphia, 53; Portland, Ore., 35; Rochester, 43; St. Paul, 13; St. Louis, 20; San Francisco, 74; Syracuse, 50; Toledo, 30; Worcester, 54.

## TORONTO PARTIES BUY POTTERY CLAY

A deal has just been closed whereby W. B. Stratton, T. M. Price and several other capitalists of Toronto, Ohio, become the owners of one hundred acres of land located in Texas. The purchase price was \$62,000.

The land was purchased because of the rich vein of pottery clay that is on it. The clay is said to be about the best that is found in the United States. The Toronto people heard of the land a long time ago and some of them made a trip to the Lone Star State to make an investigation. When they returned to Toronto they had a quantity of the clay shipped there. Tests were made in the Toronto pottery and it was found that the clay makes the finest of pottery ware. Soon after the tests were made negotiations for the purchase of the land were entered into but a deal was not consummated until a few days ago, the fact that a deal had been made was not made public until now.

On the tract of land there is a strata of pottery clay said to be between 18 and 20 feet thick. As it is necessary for the potteries of this section of the country to have most of their clay shipped to them from other parts of the country and some of it from abroad the Toronto people are inclined to think that they made a big strike by purchasing the land. While the price they had paid for it seems quite large the new owners of the land do not consider it an exorbitant price. Preparations for the mining of the clay it is stated will be started at once and it will be only a comparatively short time until quantities of it will be shipped to the Toronto pottery.

## OBITUARY

Newell C. Ridgeway, for many years a well known brick manufacturer at Middletown, N. Y., died at his home of Bright's disease. He was 76 years old.

Abram Reese, inventor and scientist, died at his home in Homewood, near Pittsburgh, Pa., of paralysis. He was the 3d of the well known Reese brothers to pass away within a year and was a brother of Isaac Reese, inventor of the Reese Silica brick.

C. J. Monroe, age 55, superintendent of a brick works on Anville Island, near Van Couver, B. C., died of Pneumonia. Mr. Monroe has been engaged in the brick business for the last 25 years, conducting plants at Hartford, Ct., Gay City, Va., Seattle, Wash., and in Van Couver, B. C. He leaves two sons at Columbus, O.

## BRICK MANUFACTURERS TO FORM AN ASSOCIATION

The brick manufacturers of Minnesota met the 1st of May in the rooms of the Minneapolis Builders' exchange on Sixth street and in preparation for a business meeting. When it is possible that the assembly takes definite steps toward organizing a state association.

The first meeting was purely informal and the entire time was devoted to social intercourse. The members present represented the brick making industry in every section of the state, and an exchange of ideas once a year is considered a benefit to all concerned. The brickmakers lack a thorough organization in Minnesota and it has long been the object of several prominent members of the craft to formulate plans for forming the manufacturers of the state into a strong association for the purpose of mutual benefit. Many of the brickmakers are aware that there are new tricks to the trade which are being discovered every day and that the only way for them to become cognizant of these new "wrinkles" is through association. At present with no organization, the manufacturers meet in a most informal manner once every year, but not being united, concerted action on any subject cannot be taken.

## INDIAN WOMAN WANTS HER ALLOTMENT CLEARED

Attorneys for Ollie T. Barker, a Cherokee woman, appeared before the Indian agent and demanded that the Bartlesville (Okla.) Vitrified Brick plant and its owners be put off her allotment at Bartlesville as intruders. The allotment runs right up into the town of Bartlesville and the land is probably worth \$15,000.

The land was allotted to a man named Ross, who leased it to the brick company. Ollie Barker contested the right of Ross to the allotment and won the contest. She claims that she will force the owners to move the brick plant off or pay her her price to remain on the property.

A new brick plant, with a capacity of 25,000,000 annually, is to be built at Clymer, Indiana Co., Pa. Some of those interested are Thomas Bellis, of Altoona, T. L. Snyder, of Clearfield, H. W. Wildowson, of Mahaffey, W. D. Kelley, of Philadelphia, and I. S. Fisher, of Indiana, Pa.

## ACCIDENTS, DAMAGES AND LOSSES

A petition for a receiver for the Norfolk (Va.) Brick Co., has been refused by the Judge.

The plant of the Drury Brick & Construction Co., York, Pa., was sold at receivers sale May 9th.

At the plant of the Hancock Brick & Tile Co., Findlay, O., two workmen, John Champion and Jesse Embody were badly bruised while at work at the plant.

The buildings of the Rochester (Mich.) Sand Brick and Stone Co., were damaged to the extent of several thousand dollars by a gale of cyclonic proportions which visited that section.

Senator Roberts and his counsel suffered a reduction in their fees as receiver and attorney for the Montello Brick Works, Reading, Pa. Their bills were reduced more than one half.

Police are making a search for J. H. Miller, of Paxinos, Pa., a prominent brick manufacturer and treasurer of Shamokin township, who mysteriously disappeared from his home. His bondsmen are alarmed.

D. B. Yarnell, a prominent brick manufacturer at Nepolian, Ohio, was caught in the line shaft at his brick yard and terribly and perhaps fatally injured. An inch and a half thick of wooden casing was broken by his body.

The Coffeyville (Kansas) Pottery & Clay Co., have filed a complaint with the Kansas Railroad Commissioners, charging that the stoneware makers in the west are in a trust and aided by the railroads. They ask for a readjustment of the rates.

## FIRE! FIRE! FIRE!

The Columbia River Clay Co., Kennewick, Wash., was damaged by fire and with other property caused a \$10,000 loss.

Fire destroyed the works of the Gem Clay Products Co., at Sebring, Ohio. The loss was \$20,000 and was fully insured.

Fire visited the Manitowoc (Wis.) Clay Products Co., for the fourth time in the last 18 months causing much damage to the plant.

A fire in the brick yard of Michael Kane at 190 New Park ave., Hartford, Ct., caused damage to the extent of hundreds of dollars.

Fire destroyed the sheds in the West End Brick Co., at 15th and Allen Sts., Allentown, Pa., causing a loss of \$2,000, which is partly covered by insurance.

The brick works of William Robinson, Manor, Sask. Canada, was completely destroyed by fire, causing a loss of several thousand dollars, and only partly insured.

## "BUSINESS GOOD," SAYS SEBRING

Frank Sebring of the Sebring Pottery company, Sebring, O., in speaking of the pottery business, said that his plant was working continuously on a 90 per cent. basis and sometimes more.

Business has continued good with the Sebring company, during the entire time of the financial depression. Other potteries in the same vicinity have felt the depression more keenly.

**WOULD LET ROADS FIGURE A WAY OUT**

A solution of the entire brick rate controversy was out the 8th inst. at Cleveland, O., by R. C. Wright, general freight agent of the Pennsylvania railroad, Pittsburg, while he was on the witness stand at the interstate commerce hearing. Asked what way he would suggest out of the present apparently hopeless plight, he said:

"Without binding my company at all, it has occurred to me while listening to the testimony that if we could get away from the 'brick was a brick' proposition the railroads could make the tariffs on an entirely new and satisfactory basis. For instance, put these 'diamond' bricks, \$150 per, in fifth class; then take hand made fire brick and give them a higher rate than others of the ordinary grade."

General Freight Agent Wright declared that before the decision of the commerce commission in the Stowe-Fuller case his company had planned to advance rates on paving brick. He gave increased cost of transportation and general increase in prices as a reason. He did not admit that any attempt was made to take advantage of the way opened by that decision of the commission which made it possible to put all brick rates on the same basis.

Through questions Wright said that in the last five years and a half the expenses of the Pennsylvania have increased \$6,700,000. Figures were also offered to show big decreases in revenue this year as compared with 1907.

Special Examiner Lyon put a line of grilling questions to Wright during his cross-examination. He asked:

"Why did you make this increase in rates Jan. 2?"

"We wanted more return for our service. We thought this commodity could stand more of the increase which had been borne by other commodities." Then Wright explained that the decrease in firebrick rates from 25 cents to 22½ cents a hundred nullified the general revenue effect of the boost from 20 cents to 22½ cents a hundred on paving brick.

"Can you give me the cost per ton mile on this brick?" asked Lyon. Wright, after some figuring, answered: "About 5 mills." "Is that more or less than the cost on coal?" Lyon went on. "Coal is handled by a separate department," answered Wright, "I would not know about that."

On the question of falling off in revenue, Special Examiner Lyon also put this query:

"Can you tell me what your railroad does with this money?" as if to lay some foundation for getting at whether such a striking fall in receipts has taken place of late.

Wright merely said he did not have to do with matters. Attorney Patterson, for the Pennsylvania, explained that the figures presented were secured by himself from executive officers. They went into the record.

Attorney Patterson developed by questions that a train haul now would cost 20 per cent more for help, and that much more for car repair than six years ago.

H. E. Snyder, of Nevada, Mo., has traded for the plant of the Iowa Brick Mfg. Co., at 25th and St. Joseph Aves., Des Moines, Ia., and will operate same to its fullest extent. Fred H. Overton, the present manager, will remain in charge of the plant.

**IOWA MOUNDS YIELD MANY CURIOUS POTTERY PIECES**

Excavations in the mound at Boone have been completed and during the final stages of the excavations over 2,000 pieces of pottery were discovered bearing all sorts of marks and decorations, and giving evidences of being many hundreds, if not thousands, of years old. The find so far as Curator Harlan, of the historical department, is able to say certain, is one of the richest in America, and the excavations will be left some days so as to permit expert archaeologists to come and examine the finds if they wish.

The method used in opening the mound was to cut off the sides like slices are cut from a cake. In the center was found the room with the stone floor, about 21 by 26 feet, and the walls of stone 12 to 14 feet high. All of the pottery and many human bones were found inside this room. The roof of the room had been made of timbers thrown across, with stones placed on them. This had caved in, which had smashed the pottery and the skeletons, too. In addition to the skeletons and pottery there were found a few flint tools.

The fragments of pottery are very interesting. Some of this showed a good deal of decorations. Some pieces about the top showed little raised places on the outside and it was easily seen that these were made by taking a sharp stick and punching through from the inside while the clay was wet. In one instance the maker had punched too hard and had punched through. He had pressed the clay back into place with his thumb and the markings of the thumb were clearly shown on the piece of pottery which had been subsequently burned.

The mound was one of the largest known. It was 190 feet long by 110 wide and raised 15 to 16 feet above the level of the surrounding ground. On top of it grew two elm trees and an oak of great size. Numerous clam shells of a species not now found in the river near by were found in the mound. Three or four feet under the surface of the mound was found a soil of unusual character. It was very dense and hard and it was impossible to penetrate it with a pick.

As to the age of the mound no one has yet been found to hazard a guess. For many years a dead man, buried in the mound in 1850 has stood guard over it and prevented the excavations. Relatives objected to his remains being moved. It was found that he had died of smallpox and the state law prohibited opening the grave. This was finally arranged, however, and the last legislature appropriated the money for the work.

**SIDE DUMP CARS**

Bulletin No. 1065 issued by the Atlas Car & Manufacturing Co., of Cleveland, Ohio, is out. It gives many good designs of Side Rocker Dump Cars for use in clay works, cement plants, mines and by contractors. The general specifications are given to each size of car showing just what each can be expected to do.

In addition to this line of cars the company manufacture all kinds of industrial railway equipment for all purposes.

If you are interested get Bulletin No. 1065 and their general catalogue.

**RATES CLOSE BRICK YARDS**

Unless the State Railroad commission can find some means for giving relief to the C. J. Holman & Brother Brick company of Sargent Bluffs, near Sioux City, Ia., an institution that has been established for forty-one years, and in which is invested \$100,000, will have to close its doors permanently. The company has made application to the commission for relief. Its plant is seven miles from the heart of Sioux City and for years the railroads have given it a switching charge of \$5 a car. Now they have determined that because it is outside the city limits of Sioux City it is a haul and not a switch, but the brick factories at Riverside, which is about the same distance away from the center of Sioux City in another direction, but happens to be inside the city limits, is still given the switching charge and a charge, too, of only \$2.50 a car. This discrimination effectually closes the doors to the brick plants of Sargent Bluffs. The change in rate was made but recently and the brick plants are now idle.

The Holman plant was established forty-one years ago, and is a big institution. There is invested in it \$50,000. Twenty years ago another brick plant, was established there and there is invested in it about \$50,000. Each plant has a capacity of 50,000 brick a day. Sioux City uses 30,000,000 brick a year and the Sargent Bluffs plant cannot longer compete for the Sioux City trade, for it would cost it about \$13 a car to get brick to Sioux City, while it costs the Riverside people but \$2.50. Furthermore, if the Riverside people ship through Sioux City to some other town under the present rules of the railroad commission the switching charge of \$2.50 is absorbed by the railroads, but not so with the Sargent Bluffs plant, which amounts to a further discrimination.

The only difference between the two localities is that one is just inside the city limits of Sioux City and the other just outside. The commission has promised to take the matter up at once, but it is not entirely certain that it can give relief. There is a technicality in the law which may prevent the board remedying the matter.

**CARLISLE WORKS READY FOR OPERATION**

The largest brick and tile plant in this part of the country has been completed, the last piece of machinery has been installed in the main building of W. L. McKissick & Co., in Carlisle, Iowa. The building of the plant was begun eight months ago near the white clay fields after a large tract of land had been donated to the company by the citizens of that town as an inducement to open business there. The cost of the new buildings and fittings tops the \$40,000 mark.

The fires in the furnaces will be lighted for the first time about June 1, and a number of men have already been employed to start work on that date. The company will take over a hundred men into their service. The machinery installed is of the newest pattern and many patent devices for the carrying, dumping and burning of clay will be tried as innovations. An electric line for the hauling of the clay from the fields two miles away is already in operation.

A company has been organized at Abilene, Texas, with \$200,000 capital stock to make brick. Architect G. W. Brillhart is one of the stockholders.

**TASTE OF MOSQUITOES AND THEIR PREFERENCE FOR COLORS**

Consul-General Richard Guenther furnishes the following report on the mosquito and the alleged preference of that sanguinary insect for colors and persons:

It is stated that the mosquitoes are strongly influenced in choosing their victims by the color of their clothes. In 1841 Spence found that a loose fabric of white threads kept mosquitoes away much more effectively than one of black threads. Joly observed in Madagascar that mosquitoes prefer to alight on black soil rather than on white sandy soil, and rather on black shoes and clothes than on white. The natives of Madagascar even suspend pieces of black fabric from the ceilings of their huts in order to attract the mosquitoes to it. Joly also found that light dogs were tormented less by mosquitoes than black ones, negroes more than Europeans. Similar observations were made in India. The Englishmen, Nuttall and Shipley, found that *Anopheles maculipennis* preferred colors in this order: Dark blue, dark red, brown red, black, gray, olive gray, violet green, light gray, pearl gray, pale gray, azure blue, ochre color, white, yellow. The malaria expert, Galli-Valerio, director of the institute for experimental hygiene and parasitology at the University of Lausanne, Switzerland, confirms these facts in his "Manuel pour la lutte contre les moustiques," just published, as a result of his own experiments. He states that in experiments with the *Anopheles maculipennis* and *Anopheles bifurcatus*, 119 settled down on dark colors and only 33 upon light ones. Similar results were obtained with *Culex pipiens* and *Culex vexans*: 349 preferred dark and only 120 lighter colors.

Thus the chances of the number of mosquitoes' bites may be decreased by choosing light colors for our clothes, but they can not be avoided entirely. It is the same with all the remedies used in the open air. Tobacco smoke is the most efficient, but not at all infallible. Camphorated vaseline and other strongly smelling ointments rubbed on the hands are only efficacious until the odor has evaporated, which is done quickly on a hot day. The only certain protection is a veil of muslin gauze such as is worn by the Italian railroad watchman and soldiers in the malarial zones.

**THE KONNIEK SYSTEM CATALOGUE**

The American Sandstone Brick Machinery Co., of Saginaw, Mich., have just issued their 1908 catalogue of sand line brick machinery. It is much larger than in former years and shows more complete the Konniek system.

Over thirty sand line brick plants have been erected in different parts of the county, all of which are giving the greatest satisfaction as can be seen by reading the testimonials.

The Improved "A" Konniek Rotary Press, shown in the catalogue, is built with extra table for making face and fancy brick on which double pressure is exerted. This press is fitted with a patent rotary brush to keep the plungers clean doing the work of one man.

Views of all kinds of machinery and plants are shown. If you are interested they will send you a catalogue.

**STRENGTH OF LINKS OF A CHAIN**

Bulletin No. 18, "The Strength of chain links," by G. A. Goodenough and L. E. Moore, has just been issued by the Engineering Experiment Station of the University of Illinois.

A series of experiments on chain links and circular rings, covering a period of two years, has been made for the purpose of confirming or disproving a theoretical analysis of the stresses in links and rings. A comparison of calculated and measured distortions affords the desired test. The result of the experiments is a complete confirmation of the analysis. Having a reliable theory, the bending moments and maximum stresses are calculated for links of various forms and the results of such calculations are applied to the formulas for the loading of chains given by Unwin, Bach, and Weisbach. It is shown that the usual formulas for chain loads give maximum tensile stresses of 33,000 to 40,000 lb. per sq. in., and maximum compressive stresses of 60,000 lb. per sq. in. New formulas for safe loads are proposed. The bulletin is concluded with four appendices giving in full the theoretical discussion which is the basis of the experimental work.

This bulletin will be of special interest to all engineers and manufacturers who are concerned in any way with hoisting and transmission. Copies may be obtained upon application to the Director, Engineering Experiment Station, Urbana, Ill.

L. P. BRECKENRIDGE,  
Engineering Experiment Station University of Illinois,  
April 17, 1908 Urbana, Illinois.

**BRICK MEN FIGHT WORKHOUSE PLANT**

Minneapolis brick manufacturers are considering the advisability of taking legal steps to abolish the brick plant that has recently been opened at the workhouse.

It is contended that the city charter does not give the municipality a right to engage in the manufacturing business.

It is claimed by many of the manufacturers that the workhouse plant will make serious inroads on their business. Others do not think that the plant will amount to much but will take steps to abolish it if it proves to be a winning proposition. The matter came up for discussion at a meeting of brick men from Minnesota and Wisconsin in the Builders and Traders' Exchange rooms. No definite plan of action was outlined.

Charles M. Way, president of the Minneapolis Brick and Tile company, said that he saw no immediate danger from the Camden Place Institution.

"In the first place I don't believe it will be successful. The season of operation will be confined to about three months and to erect buildings in which winter operations could be carried on would mean an immense outlay of money. Then again it will be found necessary to hire high priced men to do the expert work which convicts cannot do. If, however, the venture proves to be a menace to legitimate manufacturers some action will be taken—just what I cannot say."

Eugene Young, secretary of the Builders and Traders' Exchange is not antagonistic to the brick yard principally because he does not think it will be a success.

"It has one advantage—that of teaching men a trade. At the present time it seems almost that a man must go to prison before he can learn a trade. The unions won't allow apprentices to work and as a result young men cannot learn the trades of their fathers."

**HUDSON RIVER TO CURTAIL OUTPUT**

There will be a meeting of local brick manufacturers at the Rondout, (N. Y.) Club rooms, when the matter of wages for the coming season will be acted on. Only "home" help will be employed the coming season as the manufacturers have decided not to import any more negroes from the South. It is said that an agreement has been reached between the brick manufacturers and the Cornell Steamboat Company regarding towing rates and the plan to go into an opposition towing business has been set aside for a time.

The plan of curtailing the production of brick on the yards along the Hudson river during the next three weeks, decided upon at the meeting of the Brickmakers' Association at Newburgh, is for the purpose of bringing the market to a normal condition. Although the yards opened the output will be only half. Brick that cost some yards \$5.50 to make last year sold for \$4.50 in New York last week, and such prices have been followed by a slight reduction in wages. It is hoped that by suspending the operation of all the yards during the month of May and holding the stock on hand at \$6 per thousand these discouraging conditions can be improved.

Manufacturers who pay rent for their yards are in particularly bad shape just now. Figuring rent at one dollar, and with the scale of wages and the cost of supplies as they have prevailed for the last few years, it costs these men about \$6 to put one thousand brick on the dock in New York. During the years 1905, 1906 and 1907 the average profit was about \$3 per thousand, so that the small man or, as the ordinary rent-payer is considered, a two-machine operator, was satisfied with his complement of four million.

In view of all the facts it was considered advisable to curtail the output, keep down the volume of shipments to New York, hold out for \$6 per thousand, and if necessary store brick on the yards until the market improves, which is only a question of time.

**HAVE SECURED A LARGER OFFICE**

The American Process Co., 68 Williams St., New York, have secured a larger office in which to do business and are now in a better position to take care of their large business which will soon follow the present hesitancy on the part of purchasers to place orders.

While business for the past six months was not as heavy as last year, they have sufficient orders to keep the entire organization going, and they already see indications of returning of normal conditions in their line.

They are only one door north of their old stand and would like to hear from old customers.

**INTERSTATE COMMERCE COMMISSIONER**

Special Commissioner Clark of the interstate commerce commission will come to Ottumwa, Ia., on May 26 to hear three cases of alleged discrimination in freight rates against railroad companies. The cases were brought to the attention of the commission by the Ottumwa Commercial association. The cases which will be heard are one by the Ottumwa Brick and Construction company against the Chicago, Milwaukee & St. Paul Railroad company; and by the Ottumwa Box Car Loader company against the Milwaukee and one by the same company against the Rock Island.

## PRODUCTION OF SAND-LIME BRICK IN 1907

Complete statistics concerning the production of sand-lime brick have been received by the United States Geological Survey, and an advance statement on this industry is now published in order that producers may receive this information at the earliest possible date.

In 1907 there were 94 plants engaged in the manufacture of sand-lime brick, the total value of the product being \$1,225,769. For convenience in comparison, similar figures for the years 1903 to 1907 inclusive are given below.

Value of sand-lime brick in the United States 1903-1907.

Year	Number of plants	Value of product.
1903	16	\$155,040
1904	57	463,128
1905	84	672,064
1906	87	1,170,005
1907	94	1,225,769

The little table above covers the entire history of the sand-lime brick industry in this country. It will be seen that the years 1904 and 1905 were marked by a very rapid expansion in the industry, but that 1906 and 1907 show very slight increases in either number of plants or in total value of the product.

Details concerning the character, quantity, and value of the product for 1907 in the different states are given in the accompanying table.

Production of sand-lime brick in the United States in 1907, by States.

State.	Number of operating plants reported.	Common brick.		Front brick.		Fancy brick.		Blocks.	Total value.
		Quantity made.	Value.	Quantity made.	Value.	Quantity made.	Value.		
Alabama, Kentucky, and Maryland	2	8,840	\$48,000	500	\$1,000				\$49,000
Arkansas, North Dakota, and Washington	2	9,000	16,000	11	200			\$400	16,600
Arkansas, Kansas, Minnesota, Nebraska, South Dakota, and Texas	10	30,642	164,000	3,754	\$1,310	45	\$900		176,160
California	4	8,900	48,000	1,800	\$1,000			(a)	49,000
Colorado and Idaho	4	8,900	30,000	5,000	\$7,000	12	\$10	1,000	37,010
Delaware, Maryland, and Virginia	3	10,000	57,000	80	\$70				57,070
Florida	4	16,420	108,000	(a)	(a)				108,000
Georgia	4	11,107	79,000	(a)	(a)				80,000
Illinois and Wisconsin	4	8,664	51,000	300	\$1,100				52,100
Indiana	4	14,941	86,000	1,300	\$1,000				87,000
Iowa	2	8,900	45,000	(a)	(a)			(a)	\$5,000
Michigan	13	20,000	100,000	(a)	(a)				170,000
New Jersey	3	(a)	(a)	(a)	(a)				50,000
New York	4	10,000	64,000	1,170	\$1,000				70,000
North Carolina	3	4,000	10,000	750	\$300				\$10,300
Ohio	3	1,700	11,000						11,000
Pennsylvania	3	4,400	41,000	(a)	(a)				45,000
Other States <sup>b</sup>		600	2,700	6,100	60,000			(c)	62,700
Total		94	182,000	17,010	100,000	57	\$1,110	2,000	\$1,225,769
Average value per plant			2,000	1,000	10,000		\$1,110		\$1,225,769

<sup>a</sup> Included in other States.

<sup>b</sup> Includes all products made by less than three producers in one State, to prevent disclosing individual operations.

<sup>c</sup> The total of other States is distributed among the States to which it belongs, in order that they may be fully represented in the totals.

The Seminole Pressed Brick Co., of Jacksonville, Florida has recently installed a 4-mold White press at their sand lime brick plant for making their face brick, in addition to the rotary presses used for common brick. Mr J. K. Munnerly, the secretary and treasurer of this company, reports excellent results from the new press, and Mr Munnerly is enthusiastic over the sand lime brick, and the future for it in Florida, which is an excellent field for this class of brick, as they are long on sand, and short on clay. There are already several sand lime brick plants working successfully in that State.

## SAND OR LIME BRICK OR BLOCK NEWS

Theodore Dangerfield of Rinard will open up a cement drain tile works at Colo, Ia., working 20 men.

The Brandywine Cement Brick and Block Co., have been incorporated with \$50,000 capital stock at Wilmington, Del.

An involuntary petition in bankruptcy has been filed against the Watertown (N. Y.) Sand Brick Co., by the creditors.

The Sterling (Ill.) Concrete Co., has begun the erection of the C. F. Pelton factory at Rock Falls, for the making of tile and sewer pipe.

The Alcko Stone Brick Co., Tampa, Fla., has been incorporated with \$100,000 capital stock. F. E. Muller is president and T. E. Lucas secretary and treasurer.

The Peerless Cement Brick Co., has been organized at Philadelphia, Pa. The incorporators are J. P. Lukens, George D. Fairleigh and Horace M. Duckykink.

The Saginaw (Mich.) Sandstone Brick Co., is being operated to its fullest capacity, and the present prospects are that it will be run at its fullest capacity all the season.

The Hoffmannstone Impervious Cement Brick & Tile Co., near Rhinelander, Wis., is about to commence the erection of a works on Wind Pudding Lake. The company expect to make 50,000 brick daily.

The Concrete Brick Co., Hoboken, N. J., has been incorporated with \$100,000 capital stock. Incorporators are Spencer Rider, of Hoboken, William H. Coe, 42 Broadway, New York and Charles H. Phillips, of Cassadaga, N. Y.

## HARTFORD PRODUCERS FORM A JOINT STOCK COMPANY

The brick manufacturers of Hartford, Ct., have formed a joint stock company for the purpose of securing more united action in the production and sale of their product. They have filed a certificate of incorporation in the office of the secretary.

The new company will be known as the Capitol City Brick Company and will have a capital of \$75,000. Its announced purpose is to manufacture and deal in brick and other building material and to hold such real estate as may be necessary to enable it to carry on its business. The incorporators are the Wilson Brick Company, Dennis & Patzner, Eugene D. Mills, Michael Kane, Jefferson Conklin, Cephas Dorr and Thomas Dennis. The list includes practically all the brick-yards on Windsor avenue and the northern part of the city, Prospect avenue and New Park avenue.

One of the incorporators said that, as he understood it, the owners of the individual yards would manage them as formerly, but there would probably be an agreement as to the selling price of its bricks and perhaps on other matters connected with the business. The company will organize within a few days.

## MISCELLANEOUS ITEMS

Charles H. Berry, Farmington, N. H., intends making the fine clay, found upon his farm, into brick.

Frank Osborne, of Illiopolis, Ill., has gone to Patoka, Ill., where he will manage the brick and tile works.

The large plant of the Columbus (O.) Hocking Coal & Iron Co. at Kachelmacher will be ready to start May 1st.

The Melcher Coal & Clay Co., O'Quinn, Texas, will establish a brick and pottery plant. J. C. Melcher is the manager.

The Anson Brick Co., Wadesboro, N. C., has been incorporated with \$10,000 by R. J. Beverly, Eugene Ingram and others.

The Thornton (W. Va.) Fire Brick Co. at a recent meeting elected R. W. Kennedy president and D. R. Potter, general manager.

The Brooklyn (Ind.) Brick Co. has started their plant for the season. The works are owned and operated by Greenfield people.

U. S. G. Williams has bought to acres of clay land at Mt. Pleasant, Iowa, and will start a brick factory. The buildings are now being erected.

The Norton Brick Co., York Corner, Maine, are now installing two big modern brick machines which will have a capacity of 100,000 brick daily.

Six hundred acres of clay land has been leased by the Harbison-Walker Refractories Co., Pittsburg, Pa., at Strasburg, Ohio. Same is being drilled.

The Chelsea Brick Co. has been incorporated with \$100,000 at Atlantic City, N. J. Incorporators are Benj. Bacharach, Henry McIntyre and E. S. Royal.

The Placer Brick Mfg. Co., Goldfield, Nevada, has been incorporated with \$100,000 capital stock by C. A. Gehrmann, Frederick Maness and Will E. Sirbeck.

A paving brick plant is being built at Santa Monica, Calif., by Los Angeles people, making the third plant for this place. The yard will be at Colorado Ave. and 26th St.

The Durlington Paving Brick Co., Galesburg, Ill., closed down their plant April 15th for lack of coal, 400 men were employed. They use over 1,000 cars of coal a month.

Tracy Dorman, Pownel, Vt., has found that the clay in the hills near his home is well adapted for brick making and expects to form a stock company to manufacture them.

Fred Bossinger and Ross Knepp, of Lewistown, Pa., have bought the Robert Montgomery brick works and will improve and operate same. The firm name is Bossinger & Knepp Brickbat Brokers.

The Inland Clay Products Co., Palouse, Wash., has been incorporated with \$100,000 capital stock to take over the Palouse Pottery Mfg. Co. plant. A. R. Patton, of Palouse, and C. H. Patton and L. H. Thatcher, of Spokane, are the stockholders.

The Redwing Sewer Pipe Co. have secured 30 acres of land in Hopkins, a suburb to Minneapolis, Minn., and will build a \$300,000 sewer pipe plant there. The building will be four stories high and 80x300 feet, and entirely fireproof. A main office will be opened in Minneapolis. The plant will be run independent of the Redwing plant of the company. H. S. Rich is president of the company, and lives at the Plaza Hotel.

The Owensboro, (Ky.) Pressed Brick Co. is making arrangements to extend its business. They have just built new round and square kilns.

The Farmers Brick Co., Terry, Mont., has been incorporated with \$10,000 capital stock, by W. A. Cameron, Alfred Wright, J. B. Kempton and J. W. Stith.

Cook Bros. Brick & Tile Co., Newburg, Ind., has been incorporated with \$25,000 capital stock. Directors are Frederick Cook, Frederick Kroeger and Andrew J. Rutledge.

The Shelbyna Brick & Tile Co. at Shelbyna, Mo., have their building under cover and expect to be making brick in June. C. C. Boughton is secretary and treasurer of the company.

The Los Angeles (Cal.) Paving Brick Co. will build a yard at Montebello to make paving brick exclusively. Manager Mulford is now in the east inspecting paving brick plants and will buy machinery.

The Wallen (Ind.) Tile Mill Co. has been incorporated with \$3,500 capital stock and will build a tile works. Ben. R. Barva is president, J. V. Fox, treasurer, John Wort, secretary, and Henry Pranger, manager.

The New Era Vitrified Brick Co., of Detroit, has bought the plant of the Michigan Vitrified Brick Co. at Bay City, Mich., and will operate same within 30 days. E. G. Gearhard is the manager and secretary of the company.

W. E. Dickson, secretary of the Humboldt Clay Mfg. Co., has secured a lease of the Crow Waterfront in the east end of Eureka, Cal., and the plant will be located here instead of at Freshwater. The machinery has already been ordered by the manager, C. J. Danton.

## DIRECT HEAT

## DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**

68 William St.

NEW YORK CITY

J. A. Corbell, of Doxey, Okla., wants prices on brick making machinery.

The Gooding (Idaho) Brick Co. will soon be able to supply brick for the trade.

C. H. Carter, of Bolton, Ga., wants brick and tile making machinery for a small capacity plant.

C. D. Martin, English-American Building, Atlanta, Ga., is in the market for machinery to make brick.

Charles E. Raudisch, of Ohio, and other parties have organized a \$25,000 company to make brick at Hollandale, Wis.

The Morgan Coal & Fire Clay Co., McCartney, Pa., has been incorporated with \$25,000 capital stock. M. J. Cox is treasurer.

The Eno Brick Works, Exeter, N. H., have been started up for the season. Fred Eno will manage the yard for the Eno estate.

Thomas Simpson, Columbia, Tenn., will remove his brick making plant to Riverside Park and will erect three new buildings for the same.

The Cincinnati (O.) Roofing Tile & Terra Cotta Co., Winton Place, will enlarge their plant and already have secured additional ground.

M. M. Bushong, formerly manager of the Edwardsville, (Ill.) Brick Works is now the manager of the Bloomfield (Ind.) Vitrified Brick & Tile Co.

The Okmulgee (Okla.) Brick Co. last turned out its first brick and the city is celebrating over the production of its first manufacturing industry.

F. E. Action, of Alvin, Texas, after three efforts has been able to organize a brick making plant, which will be built on land owned by him. Several carloads of machinery have arrived.

The Iowa-Missouri Clay Products Co., Versailles, Mo., has been incorporated and will build a large plant costing \$60,000. Harlan A. Young can be addressed as to machinery wanted, etc.

At a meeting of the Queen's Run Fire Brick Co. and the Clinton Mining Co., at Lock Haven, Pa., William Seicher was re-elected president, and William C. Geer vice president of both companies.

The Stephens Brick Co., Ltd., Portage la Prairie, Manitoba, has been incorporated with \$1,000,000 capital stock. The incorporators are Henry Stephens, L. C. Stephens, George Carter, and John Young.

Gamble & Surles, East Liverpool, Ohio, have been for several months making improvements to their plant and are now ready to start same. Part of the machinery that was in the new Ceramic plant has been purchased and installed.

C. A. Bachelor has sold his Angola (Ind.) Brick & Tile Works to well known business men of the town who will organize the Bachelor Brick & Tile Co. with \$15,000 capital stock, and will erect new kilns and add some new machinery.

The Platt Pressed & Fire Brick Co., Van Meter, Ia., which is managed by C. B. Platt, secretary of the Iowa Association, has been making many improvements. The power plant and drying capacity has been increased and an Eagle Dry Pan with a gravity setting put in. A press for making large size tile will be installed.

Harvey Burton and wife have sold to James Joynet the Latham (Ills.) Brick & Tile Works.

J. F. Gantner, of Pilot Grove, Mo., has bought Clay land at Fayette and will move his pressed brick plant there.

J. J. King has moved from Troy to Grangeville, Idaho, to open up a brick yard. He will begin at once.

The five brick yards at Hastings, Neb., have quite an army of employees at work and the present demand for brick is good.

W. H. Anderson has bought the new brick works at New Galilee, Pa., at receiver's sale and will complete and put same in operation.

The Edwards Brick Co., Columbia, Mo., have struck a 32-inch vein of coal at 60 feet and will mine 100 tons daily to supply their brick works and the town.

A. J. Yoke is negotiating with John Carbaugh, of Ft. Smith, Ark., for his brick plant on Van Buren road. If the deal falls through he will build elsewhere.

The convicts of the state penitentiary at Topeka, Kansas, are turning out brick at the rate of 25,000 daily. W. H. Heskell is the warden. They will be used in state institutions.

After being shut down for a period of several months on account of a disagreement between the company and employees, the Cayuga (Ind.) Coal & Brick Co. have reopened their plant.

The Little Giant Works at Toronto, Ohio, belonging to Nicholson Bros., Steubenville, is to not be removed to near Empire on account of the shortage of clay as was reported, but a new plant is to be built there.

# SAVES \$2.00 A TON

## AND GET THE BEST AND CLEANEST COAL

### BUY DIRECT FROM THE MINES DIRECT FROM THE MINES TO YOU

We mean just what we say **YOU**—every man who burns coal should write and find out our great Twentieth Century Method of setting coal direct from the Mine to the MAN WHO BURNS IT.

This coal is shipped direct from the spot where it is loaded into the cars to you. There is no extra switching of cars, no handling by jobbers and no shoveling off the cars and into the bins, and then out of the bins again by your local dealer. The coal goes in a free-line from the Mine to you, and you save all of the profits that the coal trust awards to the jobber and the dealer. This money you put right down into your own pocket.

# A TON OF COAL FREE

To the man who first introduces among his neighbors our wonderful plan of selling direct from the Mine to You.

Every reader of this journal is given an opportunity to secure a ton of coal free, and at the same time he saves his neighbors and himself \$2.00 on every ton of coal.

Write at once—to-day—and learn all about our wonderful method of saving you all of the profits and our methods of getting you out of the clutches of the Coal Trust. Remember, every reader of this journal who answers this advertisement has an opportunity of getting **One Ton of Coal Absolutely Free**. If you ever burned a ton of coal in your life—if you ever expect to burn coal—you should answer this advertisement at once.

### It Means Dollars to You

### HARMAN COAL CO.

Old Colony Bldg., Dept. 285, CHICAGO, ILLINOIS



## CLAY RECORD.

## WANTED

Superintendents brick manufacturing plant; estimator; fire proofing; salesman; brick and sewer pipe; salesman; terra cotta; bookkeeper; manufacturer; private secretary to manager; salaries, \$1,500 to \$4,000. Other positions in our 12 offices open. Write to—

305 Broadway, New York, or  
1016 Hartford Bldg., Chicago.

## FOR SALE

One power Repris. In number one condition, used only but a short time, capacity 10000 per day. Ask for full particulars.

American Enamelled Brick & Tile Co.  
1 Madison Ave. New York

## FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines with repair parts sufficient to make machine first class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.

GREAT EASTERN CLAY CO.  
20 Cortland St., New York

## FOR SALE

Three two-pass Whitaker pressed machines. Each machine is complete with counter shaft and ready to run. Condition good.

One single pass Whitaker machine, all complete and ready to run. These machines are for making pressed brick. Condition good. Speed 1000.  
6,500 soft pine pallets, each 30 inches long, 8 inches wide and 1 inch thick. Your pick of these pallets for five cents apiece.

We also have several engines and boilers, heaters, pumps and connections.

THE COLUMBIAN EQUIPMENT CO.  
304-306 Brunson Bldg., Columbus, Ohio.

## WANTED

We want to find a market for a large deposit of kaolin. We have other valuable clay for newware, pottery, terra cotta and high class brick.

Address, Chamberlain & Co.,  
Room 1177 Astoria, Oregon.

## BRICK PLANT FOR SALE

Containing about 100 acres of best clay without top soil, perfect drainage, situated midway between Baltimore & Washington with necessary railroad facilities. Plant was partly destroyed by fire. Two stiff mud machines, engines new steam plant, 16 tunnel hot air dryer with 240 wet feet of brick and kilns remaining intact. Large house containing a lot of material. Purchaser could make this a modern fully equipped two machine plant for a little money.

Address G. A. B.  
Clay Record, 303 Dearborn St., Chicago, Illinois

## FOR SALE

One Two Mould Simpson Dry Press Brick Machine  
One 14 ft Iron Frame Dry Pan  
One No. 6 Brewer Combination Brick & Tile Machine with all necessary dies and cutters.  
One Clay Distributor.  
One Clay Elevator.  
One Tile Elevator.

O. W. DUNLAP  
Bloomington, Ill.

## WANTED

By Large Clay Working Machinery Manufacturer a man thoroughly conversant with business and also experienced in office work for sales department. Must be in position to handle sales, experienced, and give references. No one but first-class man need apply. Address "R" care this paper.

## BRICK PLANT FOR SALE OR LEASE

Containing 625 acres of level good clay without much top soil. Good drainage, situated one mile from A. & L. Road at Vasa, N. C., with good train road to depot.

Equipped with 40 H. P. Engine One 60 H. P. Boiler, One Freese Combination Brick and Tile Machine complete for making stiff-mud brick. One good house for manager. One large barn with other buildings for help.

Will sell very cheap on account of death of our former manager. Successor will buy for cash.

Address S. T. Care Clay Record,  
Chicago, Ill.

## FOR SALE CHEAP

One "Hammer" Combined Brick Machine. Capacity 20,000 to 30,000 six inch brick per day.  
One Williams Distributor. Increasing capacity reason for selling.

OKMULDER COAL & BRICK CO., Okmulgee, Okla.

## FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,  
(Cleveland, Ohio)

## FOR SALE

Irwin Tile and Brick Plant, including sheds and kilns and 55 acres of land underlaid with limestone. Or will sell machinery consisting of one 40 horse power Boiler, one 30 horse power Engine one 10 ft. Di. Table Machine with dies to 12 inch, one Raymond Distributor, one bending Automatic Tile Table, one 10 ft. Di. Table and dies, one elevator, Carter, Trucks Wheelbarrows etc. Address  
Malow & Long Xenia, Ohio

## FOR SALE CHEAP

An F. M. Freese Combination Brick and Tile Machine No. C Good as new, guaranteed. All dies from 3 in. to 12 in. Included. Also Brick and hollow block die.  
Address, REDFIELD BRICK and TILE WORKS,  
Redfield, Iowa.

## FOR SALE

Half interest and management if desired of brick and tile plant in Wisconsin city of 15,000. Lots of clay, face of bank 40 ft., perfect drainage, little top soil, and bank adjoins. Burns 25000 per day select rich cream color brick and distributing point. Cheapest place to manufacture in the state. Splendid investment. Owners have other business.  
Address Industrial Dept. W. G. Ry.  
Chicago, Illinois.

## FOR SALE

Complete set of Cleveland Roller-Bearing Cars, (about 250) for a wheeler 12 Track Tunnel Dryer, equipped with flat double-jacked or rack cars. Also a lot of wooden racks. Bargain. Address  
RICHMOND BRICK CO.,  
1111 North St., New York City

## POSITION WANTED

Position by experienced and practical brickmaker as superintendent of a stiff-mud or dry-press brick plant. Experience in burning brick and care of kilns and machinery.

W. S. Carr of City Record  
Chicago, Illinois

FOR SALE: CHICAP—New and re-laying rails 12 lb. 16 and 20 pound. For prices address,  
ATLAS CAR & MFG. CO.,  
Cleveland, Ohio.

## CERAMIC PLANT FOR SALE

Receiver wants an offer for a three-kiln plant ready for turning out sinks, trays etc.

CHAS. R. LAMMAN Receiver,  
Perth Amboy, N. J.

## CLAY AND COAL FOR SALE OR LEASE

Have 1500 acres of the celebrated Center Co fire clay and coal land to sell very reasonable or lease on royalty. Three veins of fire clay and one three and one-half foot of coal in same hills at Denton Ky., on line of two railroads.

Address J. H. BURETTE,  
622 West Cass Ave.,  
Ashland, Ky.

## CUTTERS FOR SALE

Several Automatic End Cutters and Brick Edgers for Chambers Brothers Brick Machine, cheap. Inquire  
HILLING CO.,  
Chicago, Ill.

## CASH FOR YOUR BUSINESS OR REAL ESTATE

If you want to sell send me full description and price. Confidential. Established in 1902. I bring buyer and seller together. If you want to buy, sell or exchange any kind of real estate or real estate anywhere, at any price, address

FRANK P. CLEVELAND,  
1725 Adams Express Bldg.,  
Chicago, Ill.

## WANTED

Second hand Smooth Roll Clay Crusher, with capacity for 15,000 to 20,000 bricks per day. Must be in first class condition. Give full description when writing. Address,  
ED. SHANNON, Shellaburg, Iowa.



For sale, set two 16 and 20 lb. 4 Wheel, \$3.00 8 Wheel, \$3.25

Address, Redfield, Iowa. Sold by all dealers

A. HARR, 41 White St., BATTLE CREEK, MICH.

## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy or invest in the company. APPLICATIONS INVITED.  
Care Clay Record, Chicago, Ill.

## PLANT FOR SALE

Very valuable Brick and Tile property on James River, Va., complete stiff mud plant, 25 thousand capacity, practically new. Broad new self mud pit, including steam dryer, 50 thousand capacity; automatic conveyors, new and commodious dwellings. Not a better equipped yard in the state. 20 acres or more plastic red clay, adaptable for brick and drain tile. Right rapidly growing cities furnish market for bricks net \$7.00 at kiln. Practical monopoly of best market in U. S. for drain tile net \$2.00 per thousand for 6 inches. Immediate demand and no factory in 200 miles. Cheap fuel and labor; can operate with steam dryer year round. Improvements have cost \$15,000 but I am not a brick-maker and to the right party will sell low and easy payment.

J. M. JONES  
Lock Box 5, Williamsburg, Va.

## FOR SALE

Boiler, 9 tubes, 3 inches, 15 feet long by 66 inches horizontal.

2 Steam Gear Tempering Wheels, complete.

1 Posts Distributor, 30 inch rolls

1 American Clay Manufacturing Co. Brick dolly

Cutter 12 inch

1 Correll Single Die Steam Repris. 15 M daily

1 C. Steele & Sons Brick Machine, Automatic

Roller 30

American 1 lay Big Co's No 10 Brick Machine,

Automatic Rotary 15 M. Cutter or End Cut is

brick, capacity 100 M. brick per day.

1 Chambers Automatic Rolling Machine, 30 M.

1 Chambers Automatic Rolling Machine, 30 M.

1 Richardson Double Die Repris. Made by Ohio

Cement Co.

1 Martin Drag Belt Conveyor, 35 feet long, 15 inch

6 Clay Bank Carts

12 Sets Carts Harnesses.

12 Trac

1 300 horse power Side Valve Engine.

1 Kuhn-Stratton Hot Air Pump.

4 Yard Roller.

1 Davidson Pump, 2 inch discharge.

Address, N. J. CAREY  
CAREY OF CLAY RECORD  
Chicago, Illinois

## FOR SALE

One No. 2 Potter & Co Clay Distributor. Used only six months. Address,  
C. ROLFSBURG SONS  
Aurora, Illinois

## FOR SALE

Have 50 acres of level good clay without top soil, perfect drainage, situated one mile from A. & L. Road at Vasa, N. C., with good train road to depot.

Equipped with 40 H. P. Engine One 60 H. P. Boiler, One Freese Combination Brick and Tile Machine complete for making stiff-mud brick. One good house for manager. One large barn with other buildings for help.

Will sell very cheap on account of death of our former manager. Successor will buy for cash.

Address S. T. Care Clay Record,  
Chicago, Ill.

## FOR SALE

Will sell brick plant that can manufacture Common, Hollow and Veneering Brick. Depth of clay is from 40 to 50 feet, and all good. Clay plant is in good order and is situated in the Twin Cities.

Address O. B. Care Clay Record, Chicago, Ill.

## SHALE CLAY FOR SALE

Have bed of red, ochraceous and blue shales

exposed full length of 3500-foot railway

cut and to height of 90 feet. Three miles

from business center of Des Moines, growing

city of 100,000. Big center for clay

products. Over 2,000,000 tons coal mined

annually. Shales suitable for hollow block,

brick, paving block, tile, sewer pipe. On

river. Level ground for factory sites.

Twenty-five acres for sale.

Write Inter-Urban Railway Co.  
Des Moines, Iowa.



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### **GREAT DRAINAGE SURVEYS—MILLIONS OF ACRES OF MORASSES ACCURATELY MAPPED BY GEOLOGICAL SURVEY.**

The cause of national drainage has received a strong impetus as a result of the resolution of Senator Clapp, of Minnesota, calling upon the interior department for information regarding the surveys and investigations which have been made of the nation's swamp lands. The senator is himself one of the most earnest advocates of this great scheme of agricultural reclamation which equals if it does not indeed surpass in importance and magnitude the subjugation of the American desert through irrigation.

The report of Secretary Garfield in answer to the Clapp resolution is a revelation even to those who are most interested in the drainage movement. It shows that enormous areas of swamp lands have already been accurately surveyed in the regular topographic work of the geological survey and that sufficient information is even now at hand to enable the government to commence at once upon the construction of drainage projects in case of the passage of one of the national drainage acts now pending before congress.

"I am more than pleased," said Senator Clapp, "not only at the promptness with which the information asked for in my resolution has been furnished, but with the information itself. It largely simplifies the drainage question, since it appears that the great topographic surveys of the government are in many cases in reality accurate preliminary drainage surveys and afford just the information needed to intelligently discuss the drainage problem from a national standpoint. The preliminary investigation of the geological survey have been of immense importance to the government in promptly carrying out the provisions of the irrigation act, but I had no idea that the regular surveys of that bureau, wherever they have been made over areas containing swamps—millions of acres, as shown by this report—would constitute preliminary drainage surveys and show the feasibility of projects."

#### **GREAT SCOPE OF GEOLOGICAL SURVEY'S WORK.**

The bringing to light of this basic information regarding our wet lands is merely an illustration of the breadth and

comprehensiveness of the work that has for years been carried on by the geological survey. It seems that we have an organization in this bureau of which we may well be proud. It goes quietly ahead year after year in its investigations and examinations of the natural resources of the country, and when it is called upon for information on any of the subjects under this great head, it comes forward with the results. National drainage is popularly supposed to be a bran new idea yet this report states that examinations for the drainage of land have been conducted by the geological survey for many years, as far back as the early 80's Director Powell assigning to Professor Shaler the special study of the morasses of the United States. The results of his investigations (6th and 10th annual reports U. S. G. S.) form the basis upon which subsequent investigations of the interior department as well as of other departments have been based. Professor Shaler calculated our drainable area at 100,000 square miles, comparable with the area afforded by the fertile lands of the states of Ohio, Indiana and Illinois.

Topographic maps of the survey, which form the basis for drainage work, as well as many other features of governmental activity, have already been made covering over one-third of the United States, and new maps are being printed at the rate of one every three days, some 32,000 square miles having been covered during the past year. These maps, together with the hydrographic and geologic information of the survey afford all the preliminary information necessary for determining the feasibility of drainage projects and for planning the broad features of construction.

#### **FOUR HUNDRED SWAMP SURVEYS**

Of the 1,637 topographic maps published by the survey, 402 show swamp areas, and a study of them indicates that undoubted success would attend the effort to drain wet lands in a very large number of cases in widely separated parts of the country. The cost of making these maps is surprisingly low, ranging, for maps with a scale of one inch to the mile, but showing with great accuracy every topographic configuration, from 1.6 cents to 3.5 cents per acre.

Various typical maps accompany the report. Among those

specially described are areas in Minnesota, Mississippi, California, Wisconsin, New York, North Carolina and Florida. Perhaps the most interesting is the map of the drainage survey of the ceded Chippewa swamp lands of northern Minnesota, made during the past two years by the survey. With a special appropriation of \$25,000 congress directed drainage surveys and construction plans to be made for these wet lands, embracing 3,800 square miles. The geological survey has made detailed drainage surveys of 402,500 acres of these lands and drawn plans for their reclamation; it has also just completed the survey of an additional 1,280,000 acres and plans are being drawn for their reclamation.

One of the best possible illustrations of the necessity for very broad surveys, taking even the capacity of such a comprehensive organization as the geological survey, and further showing the danger of considering drainage in the light of the mere local ditching of a group of farms, is furnishing by the Panosoffice map in Florida. The map covers an area of approximately 150,000 acres, one half of it swamp, but is yet insufficient to give the key to the drainage. Add to this the map to the west with another 150,000 acres, and still the information is insufficient. Add yet again the 150,000 acre sheet to the north and for a proper understanding of the area, there are still needed maps to the south, which are yet to be surveyed. So that in order to plan for the drainage of this one swamp alone, a survey of not less than 600,000 acres is necessary.

#### IMPORTANCE OF RIVER STUDIES

The danger of doing into drainage construction without a full knowledge of the hydrography of the entire surrounding country—the flow and capacity of the streams—is pointedly set forth in the report. Swamps give up their waters slowly; drained, the rainfall of the area quickly finds its way to the master drainage channels, so that where great areas of swamp are artificially drained, it is necessary to provide that river channels shall be able to carry a larger amount of water than before. It is very probable, the report states warningly, that unless this great drainage problem is handled with discretion, and all the facts concerning run-off taken into account, there will be cases in which the value derived from drainage of swamp lands will be more than offset by resulting damage from floods in other parts of the basin.

#### GOVERNMENT ALREADY IN DRAINAGE BUSINESS

It appears from the report that the reclamation service is already actively engaged in the drainage of lands in the west on a large scale, in cases where irrigation and drainage overlap or are interdependent. It is a matter of public assurance, therefore, that in the event of any national drainage legislation, the government has already in the field and engaged in extensive drainage construction work an organization comprising the best engineering talent in the country, which is available to take up the preliminary data gathered by the Geological Survey and immediately proceed with drainage construction.

In a word, the report clearly indicates that Secretary Garfield feels that his Department is competent, in fact is fully prepared to execute any directions with respect to federal drainage which Congress may impose upon him.

#### ARCHITECT FAVORS BRICK TO REDUCE FIRE HAZARD

The fire loss in the United States every year is \$100,000,000 greater than the amount spent on new construction, is the verdict of F. W. Fitzpatrick, consulting architect of the International Society of Building Commissioners in the "Outlook." He figures that in the estimated total money loss are included the cost of fire fighting, \$300,000,000; the expenditure for insurance protection, \$19,000,000; and the value of buildings destroyed by fire, \$200,000,000. New construction, he says, costs \$600,000,000. Then he continues:

"The per capita annual loss from fire in America, not taking into account the insurance and fire-fighting charges, is \$2.30, against 33 cents in Europe. It is \$3.61 in Boston, against 24 cents in Dublin, Ireland. The solution of the problem lies in prevention. In brief, erect buildings that won't burn."

A careful distinction is made between materials that are merely incombustible and those that cannot be damaged by fire. In this connection the architect says:

"Everyone has seen cases where granite, marble, lime or sandstone, concrete, exposed ironwork and other metals were badly damaged, if not ruined, by fire; therefore, why use them in exposed places? Well-burned brick and terra cotta suffer the least in fire, and for that reason ought to be most generally used externally. Fire, earthquake or storm has little or no effect upon a sturdy steel frame, properly protected with good brick or fireproofing tile well applied. It is the standard construction of the country, so why not use it until something better is discovered?"

Discussing concrete construction, Mr. Fitzpatrick concludes:

"Some of our engineers have become advocates of reinforced concrete construction. Let them use it if they wish; but the frequent and fatal collapses of those buildings, even while under way, should make us careful as to the quality of materials and labor employed upon that theoretically fascinating but extremely hazardous mode of construction. The most ardent advocates of reinforced concrete, however, admit now that it is vulnerable to fire; therefore every particle of it should be as carefully protected from direct attack as is the metal-work of our steel-framed buildings."

#### WAGES DROP AND WILL GO LOWER

The brick yards at Chippewa Falls, Wis., are starting up and there are three men for every job. A year ago it was impossible to get help and those that applied were particular in stipulating their wages. This year all they ask is to be given work. As there is little building in contemplation the brick yards will not be rushed with work. The State Home is giving employment this year to residents of Chippewa Falls exclusively but it is not able to take care of half the applicants. It looks very much like a very quiet summer and the man with a job should be thankful and do his best to hold it as there is more than one institution about the town that is running at a loss rather than shut down their plant. Those from the West tell us that the situation out there is worse than it is here and that there are hundreds of people that would gladly return if they had the money to return with.

# DEVICES FOR CONTROLLING TEMPERATURES IN BRICK KILNS\*

By PROF. M. B. BAKER, ONTARIO SCHOOL OF MINING,  
KINGSTON.

I have had the pleasure of being present at your last two conventions held in Hamilton, and Toronto, respectively, and as I had addressed you at each, I had hoped to escape this time, but the persistence of your very energetic secretary, could not be turned aside by any other answer than "Yes." I am, therefore, with you once more.

Since our last meeting in Toronto, my report on "Clays and the Clay Industry of Ontario" has appeared as Part II. of the Report of the Bureau of Mines, for the year 1906. I hope you have all received a copy of it, and that it has been of some small benefit to you in your very important work. I say important because recent statistics show that clay products represent almost one-fifth of the total output of our mineral industries.

In Great Britain and on the Continent, in all cities of reasonable size, the building regulations demand fire-proof structures, the result is that all structures of any pretension, are built of iron, with clay products, or re-inforced concrete. We have only to look about in this country to see that we are rapidly copying the old land, and it is not difficult to see what an important part brick, tile, hollow-blocks, and the various kinds of terra-cotta-lumber and terra cotta itself, will play in all our structures in the very near future. All these and other classes of clay products are now manufactured by members of your association, and you are to be congratulated in establishing these conventions, and having men as members who will come here and frankly tell their brother members the results of their experiments, and the secrets of improving the qualities, and increasing the value of their products.

In selecting a subject on which to address you to-day, I must confess I had some difficulty, for you have many difficulties to contend with. I have observed, however, that burning is one of your chief sources of trouble, and I will endeavor, therefore, to give you two simple methods of controlling the temperatures necessary for good brick-making.

Most brick makers are able to burn a first grade article, if they can attend personally to the burning, but to have a large output means that the owner cannot always be present to look after the burning himself. If I am able then to bring to your attention, a method by which, having secured one good burn, you can always repeat it, I will feel well satisfied that I have done you a service.

I would, therefore, call your attention first to the use of the Seger cones, as a means of regulating and controlling the temperature of your kiln, and I might add here that this method is used extensively in the old country, particularly in Germany, and is also considerably used by the brick makers of the United States.

Those cones, a few of which I have here before you, are of such a composition that each will fuse at a certain definite temperature, and a series has been made which will be suitable to all kilns, and to all classes of clay since they range from 1,700° to 3,200° Fahrenheit.

\* Address delivered before the Canadian Clay Products' Manufacturers' Association at Ottawa.

The following table of cone numbers with their respective melting points will show you how complete is the series:

Cone	Degrees	Cone	Degrees	Cone	Degrees
No.	Fahrenheit	No.	Fahrenheit	No.	Fahrenheit
010	1742	02	2030	8	2354
...	...	01	2066	9	2390
09	1778	1	2102	10	2426
08	1814	2	2138	11	2462
07	1850	3	2174	12	2498
06	1886	4	2210	13	2534
05	1922	5	2246	14	2570
04	1958	6	2282	15	2606
03	1994	7	2318		

You all know that no matter how completely you dry your bricks they will still give off more moisture in "water smoking" and this is not all the water yet, for at a temperature of at least 750°F. the clay is decomposed, it being a hydrated compound, and this water is driven off. This all causes considerable shrinkage, and I shall have occasion to refer to this fact later in this address.

After this point is reached the heat is gradually raised to about 1,750 degrees when the particles of clay commence to fuse and by so softening, they knit or weld together, and when cooled again they retain their hard and consolidated form. Each clay has its proper fusion point and this must not be seriously overstepped or the bricks will fuse one to another and you have as a result a large mass of bricks fused into an inseparable lump—you have all seen such cases.

To use these cones then, you fill your kiln in the ordinary way, whether "up-draft" or "down-draft" kilns, and at different parts of the kiln you place, say four of these cones on a damp brick, or other piece of clay, so that they will stand erect, placing the cones in view of the "peep-holes," so that they can be seen from outside. You now burn your kiln in the ordinary way, paying little more attention so as to secure a good burn. When drawing the kiln, note carefully the condition of the cones, some will be fused down flat, some only bent over, and one or more will be standing quite erect as when put in—the cone with the lowest number left standing erect represents the temperature your clay requires for good brick.

Suppose, for example, you used the following numbers, 010, 09, 08, 07, 06 and after burning a kiln to your satisfaction, you find 010, 09, 08 fused down, 07 bent over, and 06 quite erect. This will indicate that the cone 07 is your proper temperature for good hard brick. By reference to the table you see that this is 1850°F.

In future kilns then you place cones 09, 07, 06, in various parts of the kiln in view of the "peep-holes," and after water-smoking you can raise the temperature till you see cone 09 bend over, then control your fires till 07 bends over, this is your proper temperature. Hold the fires at this point, not allowing them to fuse cone 06, and you may thus repeat your good burn as often as you wish.

These cones are very cheap, costing only one cent each, and may be had from Prof. Edward Orton, of Ohio State University, Columbus, Ohio. You would not need the whole series, only numbers from 010 to 02 as given in the above list,

for all of our Ontario clays are found to fuse at less than 2,000°F.

The second method of controlling the temperature in brick kilns has to do with shrinkage. It was pointed out above that the loss of water during water-smoking, and the further loss of water at a temperature of about 750° by de-hydration of the clay itself, was accompanied by a shrinkage of the bricks. This is not all the shrinkage, however, for when the temperature has reached about 1750° and the clay particles commence to fuse and knit or weld together, there is a further shrinkage, but not so much.

All this shrinkage then, causes a settling of the brick in the kilns and it is by controlling or regulating this settling that the character of the burn is also regulated. This method, however, is confined to down-draft kilns, and is accomplished as follows:

A hole is made through the top of the kiln large enough to allow a quarter or half inch iron rod to pass. This rod is stood on end so that its inner end rests on the top bricks inside the kiln, a careful burn is then made in the usual way, and as the bricks shrink, the iron rod sinks through the hole, the operator goes up every hour or longer interval as he may choose, and with a file makes a mark on the iron rod, even with the top of the hole. This method is continued till a good kiln has been burned, and this rod is then kept, and for each succeeding burn the rod is similarly placed in the kiln and the fires are hastened or dampened as may be required to allow the rod to sink to its proper mark for each hour, or such longer period as the operator may have originally chosen.

This latter method seems rather unscientific and crude, but it is an ordinary mechanical device that any of you can use without any difficulty, and without any expense, it is easily used, and it is self-explanatory. I have seen it used, and the quality of brick turned out was exceptionally good.

There are many other and more scientific methods of controlling temperatures, but you are to have a paper in these from Mr. Lovejoy, of Columbus, Ohio. It is a strange coincidence that we should both select the same subject, but it is only an evidence of the importance of this point in your industry. I have arranged with Mr. Lovejoy not to trespass on his territory, as I am sure he can treat it much better than I, and I have therefore confined my remarks to these two simple methods that any of you can use.

Your secretary has asked me say to say a few words on the "flashing" of white, or buff-colored goods. This, as many of you know, consists of red flashes or streaks on buff brick or tile. It is due to some of the iron in the original clay, having become oxidized, and ferric oxide produces the red color in all bricks.

Even the clays from which white goods are burned in Ontario, contain as much as 5 per cent, or iron in nature. And this iron is only prevented from burning to the red oxide, by the large percentage of lime in these same clays, which cause the iron to burn to the buff colored ferrous carbonate instead of to red ferric oxide. If, however, anything should happen to cause a little of the iron to burn to the oxide, we will have a red flash or streak produced on the

otherwise buff product. While the fires are up and the kiln is going well, there is no danger, as the doors are closed most of the time, many burners even "muddling" them over, so there is no direct supply of oxygen to oxidize the brick, but the trouble occurs in cooling stages of brick burning.

After the kiln has been burned, it is closed up and allowed to cool for a few days, but as it cools the bricks and the air too within the kiln contract and tend to leave a vacuum within the kiln, fresh air from outside must now come in to occupy this space, and this fresh cool air, coming in contact with the still hot brick will in many cases oxidize those bricks nearest the inlet, which will be down through the chimneys and up through the floor flues of the kiln, because the heated air still inside the kiln will occupy the upper parts of it, tending to leave the space at the bottom of the kiln unoccupied. So the cool air does not enter through the fire holes and up to the dome of the kiln, but it passes down the chimneys and in through the flues into the bottom part of the kiln.

You will notice that I said the cool fresh air meets the hot brick and oxidizes them, so that you see heat is necessary for this reaction. If, therefore, we can cool the bricks to such a point that they cannot oxidize, and can do this without letting them come in contact with fresh air, we will have solved the question.

The best method that I can suggest for doing this is to keep one or two fires going for the first two days of cooling, this will keep a small draft through the kiln in the regular way, and up the chimneys, thereby preventing the cool air from entering by the opposite route. In the meantime the kiln is cooling down to such a point, that the bricks will not oxidize even when the fresh air is admitted.

For burning red goods, the opposite condition is necessary. That is, you may admit as much fresh air in cooling as you wish, so long as the cooling is not done so rapidly as to chill the bricks and cause them to "shake" or crack by too sudden contractions but the direct admission of fresh air is not to be avoided here as it must be in burning white or buff products.

If there are any points that I have touched upon, that are not clear to you, I shall be glad to try to explain them to you more fully.

#### THE RUST CLAY FEEDER CATALOGUE

The Marion Machine, Foundry & Supply Co., of Marion, Indiana, are abreast of the times, and are again issuing a catalogue of the Rust Clay Feeders and Mixers. This time it contains 16 pages describing in detail the Rust Feeders and Mixers. Giving the principal advantage in their use, their operation and construction and many testimonials by the best clay manufacturers of this country and Canada.

If there were not a great saving in using Rust Feeders, such well known firms as the Alton Paving, Building & Fire Brick Co., of Alton, Ill.; J. M. Leach & Co., of Kokomo, Ind.; Ellis Brick Co., Toledo, O.; Alex A. Scott Brick Co., Knoxville, Tenn.; Grinnell Brick & Tile Co., Grinnell, Ia.; Red Star Brick Co., Warren, Pa.; Suffolk Clay Co., Suffolk, Va.; The Carson Brick Co., Charlotte, N. C., and a host of other well known manufacturers would not be using them. Write at once if you are interested in Clay Feeders.

## HOW SAND-LIME BRICK SHOULD BE MADE\*

By J. H. VAN GLAHN, TOLEDO, OHIO.

The question of how sand-lime brick should be made is becoming of greater importance as the industry expands and the use for sand-lime products becomes in better demand.

If the manufacturer of sand-lime brick will study his products and the nature and formation of his material, he will readily become convinced that in order to produce perfect brick it is necessary that the material should be properly prepared before it goes to the press, and to prepare the material as it should be it is necessary that a portion of the sand should be pulverized into an impalpable powder. The proportion depends upon the nature and formation of the sand employed.

In some experimental tests made by us within the past year perfect brick were produced by pulverizing 20 per cent of sand. As this proportion applies only to certain grades of sand, it is necessary to make a study of the material and pulverize the proportion of sand best suitable for the product necessary to obtain the best results.

Perfect bricks were produced by pulverizing 15 per cent of sand, while in other cases, by actual experimental tests, it was necessary to pulverize 25 per cent and 30 per cent of sand to obtain equally good results with sand of entirely different formation.

The practical method of obtaining the best results is to pulverize the required proportion of sand into an impalpable powder, regardless of mesh. The finer and more uniform this product can be made, the better. Mix it with the natural sand together with the required proportion of lime, which must also be properly prepared, and the product for the press becomes plastic, soft and pliable, readily yielding to force or pressure without rupture or breaks. Instead of its being short and crumbling, the material, when prepared and properly moistened just before going to the press, retains a flexible nature as it should.

Instead of allowing all the sand, together with the raw lime, to pass through the pulverizer, to obtain the required proportion of pulverized sand, it is better and more economical to run the required proportion of sand without the lime through the pulverizer and obtain an impalpable powder of sand suitable for the purpose of mixing with the natural sand.

By this method of pulverizing only the required proportion of sand into an impalpable powder, and mixing it with the natural sand, pulverizing machinery of lesser capacity can be installed to obtain the required results, the working capacity of the plant is increased, and the natural wear and tear of machinery together with the power and fuel bills are reduced. These items of savings in the brickmaking industry are of considerable importance, and should not be overlooked by the manufacturer of sand-lime bricks, when economy of production is desired.

Sand containing vegetable matter consisting of roots from trees, etc., should be subjected to direct heat and the vegetable matter reduced; otherwise it will make its appearance

in the bricks and greatly injure the binding qualities of the material. It is understood of course that the sand and lime in all cases contain the properties necessary for making good brick. The lime necessary to make the proper combination for the mixture of the required product should by all means be perfectly hydrated. No partially hydrated lime can be used with satisfactory results.

Hydration means the necessary addition of water to lime, for the purpose of slaking it without forming a putty.

The so-called dry slaks practically air-slaking, frequently called hydration, is misleading and should not be understood as proper hydration.

The method of hydration or slaking of lime varies in the different localities and by the different limes. Take a high calcium or "fat lime"; it is necessary to give it the proper proportion of water, which must be applied and come in immediate and positive contact with all the particles of lime at a period before hydration takes place.

If too much water is used the binding quality of the lime is injured by the excessively viscous fluid, and if too little water is used it is injured by burning, which renders it granulated and lumpy, causing the particles of lime to remain and show up in the brick when finished, and injure the product.

Lime hydrated in a rotary cylinder or pan is constantly agitated, in a manner mixing the finished product with the unhydrated particles, and the contents of these machines together with the unhydrated particles are discharged into a hopper or bin and transferred to a separator.

Lump lime should be crushed reasonably fine before the product is hydrated. This is necessary to get the water and moisture uniformly distributed to all the particles of lime, to secure uniform hydration.

Lump lime hydrated in open tanks or vats is subjected to both burning and drowning practically at the same time. By this method of hydration the water which is poured over the lime exposed at the top of the vat immediately rushes to the bottom of the tank over the surface of the lumps of lime, allowing the lime at the top to heat without proper absorption, causing it to burn, while the lime at the bottom of the tank is injured by the excessively viscous fluid.

To produce a perfect hydrate of lime it is necessary that the lime should be properly treated in a closed vessel, without change of temperature. The moisture absorbed by the lime should be applied gradually and in no greater quantity than is required.

Lime passing through the stages of hydration expands in volume, rises above the unhydrated particles and separates from the unslaked lime. This is true of the nature and action of properly burnt live lime, even though it is not agitated while hydration takes place.

When lime reaches the finished stage of hydration it must be expelled from the hydrator without again mixing with the unhydrated particles; otherwise a perfect separation between the finished hydrate and the partially hydrated particles cannot be successfully accomplished. The partially hydrated particles must be subjected to further exposure, and the remaining small percentage of unhydrated

\* Paper read before the Columbus Convention of the National Association of Manufacturers of Sand-Lime Products, December, 1907.

particles must be pulverized into an impalpable powder, by means of a hammer mill device which must form a part of the hydrating machine employed.

We are now able to construct a hydrater that will produce perfect hydrate of lime, such that will not expand, nor swell the brick under severe steam pressure. Hydrated lime can be successfully used in preparing the material, and perfect brick of superior quality are assured.

By pulverizing a certain per cent of sand into an impalpable powder an intimate mixture between the hydrated lime and the pulverized sand is obtained. This combination of material, mixed in proper proportion with the natural sand, forms a coating over all the grains of sand. The proportion of pulverized sand not only aids the chemical action, but fills the voids, assuring better bricks, provided that in making the bricks proper and sufficient pressure is applied.

No good results nor fancy bricks can be obtained unless the necessary pressure is applied. The extreme pressure required to secure dense and fancy bricks necessitates that the power-producing elements of the press be enormous, and as the success of making sand-lime bricks depends greatly upon the life of the press, this particular feature becomes of importance in the art of manufacturing sand-lime products.

If the manufacturer of sand-lime bricks will purchase the lime in its raw state, or the so-called lump lime, in carload lots, and run it through the hydrater, one especially designed and built for making perfect hydrate of lime, he can, in connection with the brickmaking without additional cost of machinery and labor, produce hydrated lime for the trade. The profits derived from the sales of hydrated lime in connection with the brickmaking will practically pay the cost of all the lime necessary for sand-lime products throughout the season's run, thus confining the cost and expenses of operating a brick plant solely to the sand and labor required, reducing the cost of making sand-lime bricks to a minimum and increasing the profits in the output of bricks thus made.

Hydrated lime goes hand in hand with sand-lime bricks in a commercial way. Every dealer in building supplies and consumer of bricks requires lime for the mortar in which to lay the bricks, as well as lime for other purposes; and as hydrated lime is freer from lumps, soft and plastic, it is especially adapted to mortar for sand-lime products. Mortar made of hydrated lime will adhere to sand-lime brick much better than mortar made from the raw lump lime in its unsecured state.

Every manufacturer of sand-lime bricks should make an effort to make the very best quality of bricks that can possibly be produced. It costs no more for material and labor to produce fancy bricks than what is necessary to make bricks of inferior quality.

The life and success of the brickmaking industry depends upon the quality and cheapness of production, which should be maintained, and thus build up the sand-lime industry upon a practical and paying basis, and push it upon its merits until the sand-lime brick becomes the standard of all building materials.

## ENGINE AND BOILER HORSE POWER

By W. S. STAFFORD.

In calculating the size and kind of power equipment to purchase for a new plant, many things must be taken into consideration, especially where brick or clay ware of any kind is to be made. The manufacturers of clay-working machinery have estimated from time to time the necessary horse power to drive their different machines, but owing to the great variety of material to be worked, and the constantly changing condition of same, any estimate on necessary power must be approximate. A brick machine will, at times, take double the power on account of the stiffness of material.

A good rule in estimating the proper size engine to buy is to double the horse power necessary to run the machines and then purchase an engine that will develop this power at an economical point of cut-off. This will give you sufficient power not only for the plant as it now exists or you intend to build it, but also for any additional machinery you might install later on. Tests have shown that the friction load of the engine itself, together with the power required to move transmission lines is but very little less than the power necessary to operate the different machines. Do not get an engine too large, however, or it will detract from any economical features it may have. The economical point of cut-off in an engine varies with the different types, whether running condensing or non-condensing, and general conditions at the plant. For ordinary purposes with steam at 100 pounds pressure, and average working conditions, the economical point of cut-off in a non-condensing Corliss engine is about one-fifth of the stroke.

In by gone days it was usually the custom when figuring on an engine and boiler, to get the latter 25 per cent larger than the former so as to have a surplus of steam. This idea was all right, provided there had been any similarity in a boiler and a engine horse power. A boiler horse power, according to the standard adopted by the American Society of Mechanical Engineers in 1884 is the evaporation of 30 pounds of water into dry steam per hour from a feed water temperature of 100 degrees Fahrenheit, and under a pressure of 70 pounds above the atmosphere. This represents average practice. An engine horse power is an entirely different thing and is calculated from the basis of 33,000 foot pounds per hour. This was the formula adopted by James Watt in estimating the power of his engine and is still used as a basis in steam engine calculations.

The boiler capacity of any plant depends entirely upon the steam consumption of the engine, which can be anywhere from twelve to seventy pounds per indicated horse power per hour, according to type of engine. The amount of steam necessary for operating the pumps and other auxiliary apparatus must also be considered. The writer has known of a case where a return tubular boiler with a rating of 60 horse power has been sufficient to operate a 14 x 36 Corliss engine developing 85 horse power. If this same boiler, however, was called upon to supply steam to an ordinary throttling or plain slide valve engine of 85 horse power, it would be entirely another question.

It is quite true that in many cases fuel economy is of no importance, sometimes on account of utilizing residue for fuel and again because a great quantity of exhaust steam is required. This is not often the case, however, in any plant where any attempt is made to adopt modern methods.

The Corliss engine, is without doubt, the standard of economical engine performance, and this together with its longer life, makes it the most desirable prime mover for ordinary purposes. It requires no more care than an automatic or throttling engine, but of course must have the same intelligent care and attention to details that any other piece of machinery needs. A glaring instance of what carelessness will do came under the writer's notice recently at a large plant in Wisconsin. A new 400 H. P. Corliss engine had recently been installed and was not giving sufficient satisfaction to warrant making the final payment. The engine had been left in perfect condition and properly adjusted by the expert from the shops a few weeks before, and that it should go wrong so soon was surprising. The chief complaint was that the main bearing was cutting badly and extraordinary measures were necessary to keep it cool enough to run at all. An investigation soon located the trouble. The engineer had a small emery grinder in the engine room a few feet back of the main bearing and all the dust from this machine was thrown directly on the bearing. To make matters worse the oil hole caps had been lost and no attempt made to find them. Rehabilitating was necessary and as the size of the bearing was 13 x 26, this was quite an item. This was simple carelessness on the part of the engineer and caused an expense, not only to the engine builder, but also to his firm for time lost in the shut down necessary to repair damages.

We have all seen engines in small outlying brick yards, and in some good big yards too, that were exposed to the elements in all seasons of the year for weeks at a time without any attempt being made to protect them in any way. Is it any wonder that when the yard is started again that something gives way, and the scrap pile is constantly increasing?

It is useless to buy a good piece of machinery of any kind unless it is properly set up and good care given to it. Even after you are satisfied with the size of the engine, boiler and other apparatus, remember that about ninety per cent of the necessary qualifications of a good and careful engineer is common sense.

You can well afford to profit by the advice of the average travelling representative for power equipment, provided of course, he has had sufficient experience with other plants and conditions to warrant his giving advice. His familiarity with all conditions puts him in a position to offer suggestions that will undoubtedly be of some value to you. He usually has had as much practical as theoretical experience, or he would not qualify as an engine and boiler salesman.

Give some of the affection you have for your watch or piano to your power plant and see how satisfactory the result will be. You can get along without a screen or some minor machine in your yard for a short time, but not without the engine. When it stops running, the entire plant stops.

## "THE NEGRO IN MANUFACTURING ENTERPRISES" DISCUSSED

George W. Cook, founder and proprietor of the Tioga Brick and Tile Manufacturing company, of Ithaca, N. Y., lectured in Bethel A. M. E. church on the subject, "The Negro in Manufacturing Enterprises." The admission was free, and a large crowd availed themselves of the opportunity of hearing this man who is one of the most successful manufacturers and business men of the colored race any where in the country. He is the proprietor and founder of one of the largest brick and tile factories in the state of New York.

## FILE ARTICLES FOR AMERICAN CLAY COMPANY WITH \$150,000 CAPITAL

Articles of incorporation were filed in Indianapolis, Ind., by the American Clay Company, an organization of Terre Haute capitalists, who will establish a big clay manufacturing plant in West Terre Haute. The capital stock of the corporation is \$150,000. The following are the officers: S. C. Cowgill, president; John A. Dailey, secretary-treasurer and manager; L. R. Whitney, James Luther, Fred Oakley, S. M. Cowgill and Ivy Luther, directors.

The plant will be built on the Harris land immediately southwest of West Terre Haute. Seventy-five men will be employed at first. The plant will be equipped to manufacture all varieties of shale goods.

## WYNN & CO. BUY SANDY RIDGE BRICK WORKS

A business transaction of importance took place involving the payment of a small fortune and the passing into new hands of the oldest fire brick works in Pennsylvania. The plant was built in the early sixties by John Miller of Hollidaysburg, and afterward conducted by John Miller & Son.

After the senior Miller's death the son William Miller succeeded to the business and on his death, Mr. Kitts married his widow and took over the management of the plant. Troublesome times then befell the works which had been for so many years the source of livelihood for the little settlement, and it went into an assignee's hands and ultimately was taken over by Messrs. McGaffey, Jones, Duncan and Blair. They in time were bought out by William P. Duncan and since his death four years ago, Mrs. Duncan has continued the business with L. L. Brown as superintendent.

The new owners, Messrs France and Wynn, of Wynn & Co., of Blue Hall, have on their hands so many orders for brick that they simply had to buy or build at once, and since here was a plant ready to their hands, made an offer too good to be refused, namely, \$75,000, and the new owners took over the plant, which will be improved and worked to its fullest capacity.

Mr. France will have personal supervision of the works with Lot Callahan as his first assistant. It has been an unchanging business policy of the Wynns not to have a store in connection with their works so that the Sandy Ridge store will be sold, and the men be paid in money in the future. This will mean much to Philipshurg merchants, who have always felt most agreeably the advent of the Wynns' pay day.

It is great good luck that this old established brick plant goes into possession of a firm whose name stands for success and integrity and ensures the continued prosperity of Sandy Ridge.



### THE CLAY WORKING INDUSTRY IN ONTARIO

Next to agriculture, the clay working industry is probably the most ancient in the world. Even in antediluvian times the science of brick making seems to have been understood, and at a very early period in the world's history the use of clay, not only as a building material, but for the making of pottery, and tablets on which the records of the race were preserved, was understood. But up till recently scientific methods of manufacture have been almost ignored. Now the industry is receiving more attention, and in Germany, the United States, and some other countries, departments have been established in some of the technical schools and universities, devoted to the study of clay and its products. With the advance in the price of lumber which has taken place in Canada in recent years, the demand for brick as a building material must increase, while it is preferable to stone because it is cheaper and on account of its fire-resisting properties.

A knowledge of clays and the best methods of working them has been encouraged by the Canadian Clay Products Manufacturers, an association organized some four or five years ago, which holds annual meetings at some central point, for the reading of papers and discussions on topics connected with the industry. No mineral industry can be claimed to benefit a country more than that whose raw material is clay.

Chemically considered clay is a hydrated silicate of aluminum. Popularly defined it is an earthy material, which, when moistened, becomes plastic and may be moulded into any desired shape, which is preserved when dry. When heated to redness, or slightly above it, it fuses, and on cooling assumes a rock-like consistency.

As clay is the result of the decomposition of rock, it follows that it must vary with the character of the rock from which it was formed. If the parent rock be largely felspar, the clay will be white, if it contains free silica or quartz the resultant clay will be sandy, or lean, pure clay being called fat, if it contains a considerable percentage of iron the clay will vary from yellow to red. Some clays contain lime, generally in the form of grains of nodules, and this is a very objectionable feature, as after burning, the lime is almost sure to slake and burst the brick or tile.

The clays of Ontario may be divided into three classes, the pre-glacial, glacial, and post glacial. These are based upon the method and time of accumulation. In Western Ontario the pre-glacial rest upon underlying rocks, which include Hudson River, Medina and Devonian shales. The pre-glacial clay is known as residual clay, but there is very little of it to be found, as any clay which had been formed from the decomposition of rocks previous to the glacial age would be scoured off and carried away by the action of the ice. The shales, which are simply clay pressed into a solid mass by natural agencies, are found only in Western Ontario.

The glacial clay consists of boulder, Erie, upper Erie and Saugeen clays. Boulder clay is an accumulation of clay, sand, gravel and boulders and is practically useless for the manufacture of clay products. Erie clay is boulder clay, not absolutely but comparatively free from stones, which

can be removed and is well adapted for the manufacture of brick and tile. It is found in nearly all parts of Ontario, and there is not a county west of a line drawn from Prescott to Ottawa in which it does not exist in beds from one to one hundred and thirty feet deep, if not deeper. It is sometimes known as blue clay and burns to a white or buff color. The upper Erie is a weathered zone on top of the Erie clay. It is from one to three feet thick, and as the weathering process has eliminated most of the lime, while the percentage of iron remains about the same as before weathering, it burns red. Saugeen clay consists of a series of interstratified bands of rich, reddish brown clay alternating with bands of grey or greenish sand, or shell marl. These bands are seldom over three quarters of an inch in thickness, yet banks of Saugeen clay are found 20 feet deep. This clay is doubtless the result of the ebb and flow of water. It is found in greatest abundance in the northern part of the province. Where this clay is marly it is unsuitable for brickmaking. Where sandy, it is eminently suitable, and makes excellent stock brick, though it sometimes is too strong to be used alone and requires a considerable admixture of sand. The great clay belt of northern Ontario is composed principally of Saugeen clay. A line drawn from Prescott through Casselman, Ottawa, Pembroke, Bracebridge and Paisley to Lake Huron, will mark roughly the southern boundary of the Saugeen clay area.

The post glacial clay is a lacustrine clay collected locally into hollows or lakes. It is free from stone and distinctly stratified. Not many workable deposits are found in Ontario. The only ones worked are at Hamilton, London, Conestoga and some about Toronto. Both white and red brick are made from this lacustrine clay.

In Eastern Ontario, in which is included that part of the province east of the line drawn from Prescott to Ottawa, the underlying rocks consist of limestone, sandstone and igneous rocks, but no shales, and therefore no pressed brick are manufactured there. For the same reason as already stated in speaking of Western Ontario, there is little residual clay. The glacial clays consist of boulder, Leda, upper Leda and Saugeen. The boulder clay differs from that in the west in that it contains more igneous boulders and is quite distinct from the overlying Leda clay, whereas in the west the boulder clay appears to pass imperceptibly into the Erie. The Leda clay corresponds to the Erie but is much lower in lime so that it burns red. The organisms it contains show that it was deposited in salt water. Geologists tell us that the fresh water of the upper lakes at one time found its outlet through the Hudson River, and that the part of Ontario east of the line above referred to was covered with salt water, in which the Leda clay was deposited. The Leda clay may be divided into two sections, the lower strong and stiff, the upper sandy and lean and sometimes called Saxicava sand. By mixing in proper proportions an excellent clay for red brick and tile is obtained. Saugeen clay overlies the Leda clay just as it does the Erie clay further west. It is worked in some of the largest yards and yields an excellent red brick.

The post glacial clay in the east as in the west is a lacustrine clay, but any deposits are purely local, and there are none which are used in the manufacture of clay goods.

Having thus dealt with the various characters of clays, the raw material from which clay products—brick, tile, terra cotta, sewer pipe and pottery are produced—I will take up the methods of manufacture in another article.

## GOVERNMENT REPORT ON TESTS OF STRUCTURAL MATERIALS

### EXPERIMENTS WITH PORTLAND CEMENT MORTARS

Portland cement mortars and their constituent materials have been under investigation at the structural materials testing laboratories of the United States Geological Survey at Forest Park, St. Louis, Mo., for more than a year, and a report on the work—the joint product of Messrs. Richard L. Humphrey, the engineer in charge, and William Jordan, Jr., his assistant—has just been issued by the Survey as Bulletin No. 331.

#### MATERIALS TESTED

The report comprises the results of approximately 25,000 tests and may be divided into two parts; the first dealing with tensile, compressive, and other tests, including chemical analyses, of Portland cement of different brands donated for the purpose, and of the mortars mixed therewith, in which a standard sand was used; the second dealing with tests of mortars prepared by mixing typical Portland cement, formed by combining equal amounts of seven different brands, with 22 sands; 12 gravel screenings, and 25 stone screenings procured from different parts of the United States and mixed in varying proportions. The purpose of the investigation of the constituent materials of mortar was to ascertain as far as possible the properties of materials collected at widely separated localities. It is believed that the results of these tests on material obtained near the large commercial centers of the country will indicate clearly to the users of cement and of concrete where they may most conveniently and cheaply procure the requisite sand, gravel, or other materials, and how these should be mixed to obtain the best results in tensile or compressive strength for each group of constituent materials. A study of the tabulated data should also afford means for determining the probable strength of mortar made from materials having similar properties, though gathered in different parts of the country, and should aid the constructor to decide which of the three materials—sand, gravel or broken stone screenings—will best serve his purpose.

#### OTHER SIMILAR REPORTS

The report here referred to is the third of a series now in process of publication by the Geological Survey and is preliminary to a group of reports which describe in detail the results of tests of various structural forms made of concrete and reinforced concrete at the survey's structural-materials testing laboratories at St. Louis. The first volume of this series, Bulletin No. 324, describes the effects of the San Francisco earthquake and fire on structures and structural materials; the second, Bulletin No. 329, describes in detail the organization, equipment, and methods of test adopted at the laboratories. Succeeding bulletins will describe tests of the solid stone from the same quarries which furnished the stone screenings on which the tests reported in Bulletin No. 231 were made, and the results of these tests may afford some basis for comparison of the relative values of mortars made from the stone screenings therein described.

Other reports will deal with the results of tests of the constituent materials of concrete as distinguished from those

of mortars, and with the results of additional tests of the constituent materials of mortars. These papers will be followed by a preliminary report of the results of tests of plain concrete beams and of cement-mortar building blocks. The same constituent materials have also been assembled in the form of reinforced concrete columns, many tests on which have already been completed, and the results are now in preparation for publication. Other reports in this series will include results of investigations of shear and the modulus of elasticity in tension and compression.

Parallel with this series of reports of the results of tests being made at the St. Louis laboratories there is to be published a report on the results of a series of tests made in the testing laboratories of various technological institutions. These tests were made in cooperation with the structural-materials laboratories of the United States Geological Survey and the joint committee on concrete and reinforced concrete of the engineering societies.

### NEW RATE OF WAGES ON THE HUDSON

The Terry brickyard, at Kingston, N. Y., opened with six machines and about 130 men. Last year 8 machines were in operation and 181 men were employed.

It is expected that the Hutton Co. yard will start up within a few days. They expect to run seven machines and employ about 105 to 110 men. The scale of wages is exhibited in their office window and is as follows: Truckers, \$1.30; carters, \$1.40; wheelers, \$1.60; dumpers, \$1.75; pitmen, \$1.75 tempered; pimen, \$1.60 sod; temperers, \$1.30; yard boys, 70 cents; dumpers, \$1.35 short; setters, \$1.80; butterin, \$1.10.

hereafter. This lecture, which was by Prof. Charles F. Binns, of Albert University, New York, dwelt upon the "Uses and Misuses of Pottery Material." A future address is to be delivered by Prof. Charles Orton, of the Ohio State University school of ceramics, of Columbus, Ohio.

Points to better the condition of the manufacture of pottery are being sought by the superintendents and managers. The highest authorities are being consulted. Now and then a local man is asked to talk upon a theme, and this is followed by a general discussion.

A feature of the address was the announcement of President George C. Thompson, of the United States Potters' Association, and who is also a member of the East Liverpool board of education, having an invitation extended to all the boys of the high school. It is contended that this is the first time when such a lecture was ever heard by such a large number of young men now in school in this city, and also in the face of the situation, that this is a pottery center.

### DID YOU GET ONE?

The Chicago Brick Machinery Co., have already distributed several thousand copies of their new Red Book of Labor Saving Devices and Yard Supplies; but they request us to state that if any brickmaker has been missed and has not received his copy they will gladly mail him one if he will send in his name and address to their office at 77 Jackson Blv'd, Chicago.

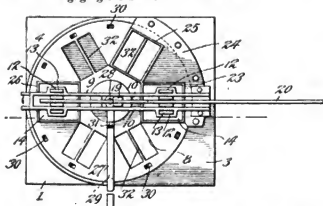
This Red Book is a unique catalogue, the only one of its kind in the trade, so every brick maker should have one on hand for reference.

# NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

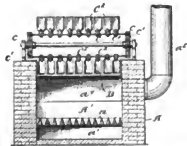
881,815. Cement-Brick Machine. Daniel H. Merritt, Lincoln, Neb. Filed Mar. 21, 1907. Serial No. 363,630.

The combination of a supporting structure, a bed thereon, a pivot on the bed, a mold disk bearing on the disk and revoluble on the pivot, pressing and discharging plungers, guides for the plungers disposed over the disk, means for supporting the guides on the structure, a mechanism for simultaneously actuating the plungers, lever mounted on the pivot and extending radially over the disk, and means on the lever for engaging the disk to turn the same.



In a machine of the class described, the combination of a stationary support, a rotatable member mounted thereon provided with a plurality of mold chambers, an operating lever extending over the rotatable member from the center thereof to a point beyond the periphery and adapted to turn the member, said lever being composed of flexibly connected sections, a stationary plunger guide, a stationary hopper, a supporting plate for the guide and hopper, a second plunger guide mounted on the said stationary support diametrically opposite from the first guide, simultaneously actuated plungers, and means arranged adjacent the second guide for receiving the bricks discharged from the mold chambers.

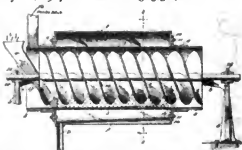
884,771. Drier. Karl F. Snow, Cleveland, Ohio, assignor to the C. O. Bartlett & Snow Co., Cleveland, Ohio, a corporation of Ohio. Filed Apr. 15, 1907. Serial No. 368,214.



In a drier, the combination of a trough, means for heating the same, and a conveyor disposed to advance material along said trough, said conveyor comprising two endless cables respectively arranged along each side of said trough, transverse bars connecting said cables at intervals, and spaced flights mounted upon said bars, each of said flights comprising a base member having a flanged upper face adapted to non-rotatably engage the bar and a radially serrated lower face, a scraper member having a threaded stem adapted to extend through said base member and the bar

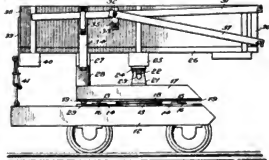
and a serrated face complementary to that of said base member, and a nut on said threaded stem adapted to draw said members and the bar together.

882,256. Centrifugal Sand-Drier. Charles S. Lee, Baltimore, Md., assignor to Frank G. Turner, Baltimore, Md. Filed July 11, 1907. Serial No. 383,314.



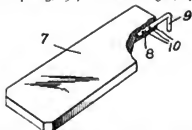
A combined drying and conveying device comprising a fixed imperforate casing, a perforated cylinder passing therethrough and entirely open at the discharge end thereof, bearings for said cylinder engaging the periphery thereof, means for rotating said cylinder also engaging the periphery thereof, and a stationary screw conveyor contained in said perforated cylinder.

882,621. Dumping-Car. Arthur G. Brown, Spokane, Wash. Filed Nov. 16, 1907. Serial No. 402,380.



In a dumping car, the combination with a tilting body, of a suitable support on which said body is mounted, standards rigid with said support, an end-gate, longitudinal bars by which said end gate is supported, said bars being pivotally connected with said body and engaging stops on said standards, so that when the said body is tilted the said longitudinal bars may move forward and said end-gate will be held in a raised position, thus permitting the contents of the tilting body to be discharged.

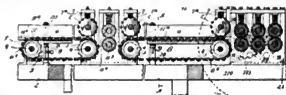
882,765. Roofing-Tile. Michael Marte, East Syracuse, N. Y. Filed Apr. 13, 1907. Serial No. 368,017.



A roofing tile formed of baked clay and provided with a single attaching member having its stem portion embedded in the upper end of the tile during the molding process and prior to the firing of the clay, said member having a laterally bent upper end adapted to form a hook for engagement with the slating-bars of the roof, the embedded portion of said member being provided with spurs to prevent its withdrawal from the tile.

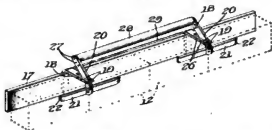
882,766. Decorticating Apparatus. Thomas E. Mitchell and Thomas H. Tombyll, Montreal, Quebec, Canada, assignors to Louis Ovide Grothe, trustee, Montreal, Canada. Filed July 19, 1906. Serial No. 326,950.

In an apparatus for decorticating flax and the like the combination with means for simultaneously feeding and combing the flax, of a pair of parallel traveling crushing or breaking members with their adjacent sides moving in the same direction and presenting a plurality of axial edges, a pair of parallel traveling stripping members with their adjacent sides moving in the same direction and presenting a plurality of axial edges, stripping members having a greater



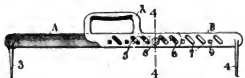
speed than the crushing or breaking members for the purpose of expelling the woody matter from the flax and the like, the stripping members being in close contiguity to the crushing or breaking members and receiving the flax or the like directly therefrom, and the first mentioned pair of parallel traveling crushing or breaking members being in close contiguity to and receiving the combed flax directly from the feeding and combing means.

883,388. Brick-Handling Appliance. Oscar Carlson, Chicago, Ill., assignor of one-half to Frank G. Theselius, Chicago, Ill. Filed June 13, 1907. Serial No. 378,703.



A brick handling appliance consisting of a member having a laterally extending bracket on its upper portion between its ends, a lever fulcrumed near the free end of said bracket and adapted to move transversely with respect to said member, and a clamping member mounted for restricted movement on the lower portion of the lever and extending longitudinally with respect to the first-named member.

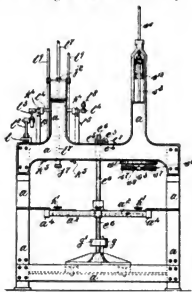
884,494. Clamp for Carrying Bricks by Hand. William F. Kerr, Cleveland, Ohio, assignor to Frederick H. Jackson, Cleveland, Ohio. Filed Dec. 21, 1907. Serial No. 407,526.



A clamp to carry bricks comprising two members having gripping jaws and flat shanks adapted to lie one against the other and having oppositely inclined transverse slots running in series to their inner ends, a fixed lateral projection on one of said shanks engaged in a slot in the opposite shank and a connecting bolt having a fixed seat in one of said shanks and engaged through a slot in the opposite shank, and a handle on one of said shanks to lift the clamp.

884,031. Apparatus for Decorating Pottery and Other Ware. Frederick Mountford, Longton, England. Filed Feb. 1, 1907. Serial No. 355,238.

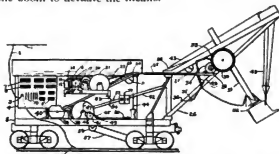
In a decorating machine for the purposes described an intermittently rotating table adapted to receive one or a plurality of chucks for holding the article to be decorated, a ratchet device for operating said table, a cam and slide device for operating the ratchet, a cam operated slide and lever mechanism for holding the table in a fixed position during



decoration and a pivoted stop device arranged in conjunction with the table and with a brake mechanism for preventing overrunning of the table substantially as described.

884,439. Power-Excavator. John B. Webber, Jr., Toledo, Ohio, assignor to The Vulcan Iron Works Company, Toledo, Ohio, a corporation of Ohio. Filed Jan. 15, 1908. Serial No. 410,891.

A power excavator comprising a digging member, a directing member therefor, rotatable means to actuate the directing member, a boom, and a dead-centerless prime mover on the boom to actuate the means.



A power excavator comprising a vehicle, a digging member carried thereby, a prime mover for pulling the member, a prime mover for swinging the member, a prime mover for thrusting the member, and connecting means for conducting power to and from the vehicle.

The Cimarron (N. Mex.) Lumber Co. will start a brick works upon a small scale and if satisfactory will enlarge to suit the demands.

Wichita Falls, Texas, is to have a \$60,000 brick making plant. Mr. Stanniforth, of Gainesville, is at the head of the company and is now making inspection of plants.

## CLAY RECORD.

PUBLISHED SEMI-MONTHLY BY THE

CLAY RECORD PUBLISHING COMPANY,

Ninth Floor, Plymouth Building,

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CHICAGO.

GEORGE H. HARTWELL, EDITOR

## SUBSCRIPTIONS

Send One Dollar bill or stamps for United States, Canada or Mexico and one dollar fifty cents for all other foreign countries.

Papers are not stopped at the end of subscriptions unless the subscribers order them so and pay up the arrearages.

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Vol. XXXII.

MAY 30, 1908.

No. 10

"I like to read American advertisements. They are to themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wannamaker.

Honest work is the only "sure thing."

To preserve credit do not use it too much.

While the fool is awaiting for an opportunity the wise man makes one.

Push in busy season, and in dull season still push. Just keep on pushing.

The earth is like a road, a poor place for sleeping in, a good thing to travel over.

It is up to the chap who is unable to see any good in this world to consult an oculist.

Subscribe for the only semi-monthly clay journal published in America. It costs only one dollar.

The stone and the iron age are the thing of the past, and it remained for the muck-rakers to discover that the steel age is now on.

Read what John says in the five bold face lines above, and I don't forget it. That's what made John and it will make you if you use his advice.

"Commercial defaults make the best exhibit in a long time and credits generally are the cause of little adverse comment.

"Railroad returns continue falling behind those at this time last year, and the offerings of heavy freight from the mills and factories remain light. There is, however, heavier forwarding of farm products, and trade makes further response to more settled weather, although evidences of cur-that city, is the attorney in charge of the sale.

"A strengthening influence in current operations is the healthier tone which pervades iron and steel and gradually increasing outputs in metal and wood working lines. Financial provision against future needs is made less of a problem by greater ease in the money market, and railroad managers now give more attention to track and equipment requirements, the prospect brightening for commitments, which should soon stimulate activity.

"Lumber buying is of a more confident kind, and with the reduced receipts of the last six months and scarcity of certain grades, values tend toward recovery from the low level."

## BUILDING OPERATIONS FOR MAY

Official reports of building operations in forty-five leading cities throughout the country received by The American Contractor, Chicago, show somewhat of an improvement as the season advances. The aggregate loss, as compared with May, 1907, is 25 per cent, whereas the previous month suffered a decrease of 33 per cent, as compared with 1907. Only ten cities reported an increase, ranging from 1 to 163 per cent, while thirty-five show losses ranging from two to seventy-three per cent. Pittsburg was at the head of the list with a gain of 103 per cent. It was followed by Denver at 110 per cent., Davenport, 52 per cent.; Paterson, 57 per cent. and San Antonio, 44 per cent.

Chicago only showed a loss of 1 per cent., while New York's loss was 52 per cent. The total amount of permits was nearly \$40,000,000, against \$52,000,000 a year ago.

## A GOOD MOVE FOR POTTERY INDUSTRY

Pottery managers and superintendents who have formed the Superintendents' and Managers' Association, with headquarters in East Liverpool, have taken up a work that is bound to produce good results. To the uninitiated work of the association is of a purely technical character and already the conferences and discussions in the rooms of the Potters' Club in the Harker building have been productive of good results.

The association has taken up the task of having a series of lectures to extend over several months delivered here, and the first of these, which was given in the auditorium of the Christian Church was a forerunner of what can be expected; tailed production diminish slowly and notable demands in the leading industries yet make a meager advance.

## OBITUARY

Thomas J. Johnson, manager of the Chesapeake Brick Co., Baltimore, Md., died at his home in Curtis Bay, after a few months illness.

H. C. Dunn, a prominent brick manufacturer of Erie, Pa., and owner of the Dunn Continuous Kiln, died at his home. He leaves a daughter, Jessie M. Dunn who will continue the brick business.

R. D. Smith, president of the North Birmingham (Ala.) Wall Tile & Brick Co., died at the Grunewald Hotel in New Orleans, La., after an illness of several weeks. He was in the seventieth year of his age and was identified with many interests in the South during his career.

## FIRE! FIRE! FIRE!

The Bellaire, Ohio, plant of the Suburban Brick Co., Wheeling, W. Va., was destroyed by fire causing a \$20,000 loss, covered by insurance. The plant will be rebuilt at once.

The plant, machinery and buildings of the Victoria Brick Company at Vancouver, B. C., was completely destroyed by fire, causing a \$10,000 loss. Insurance only \$2,500, cause of fire unknown.

The engine and boiler house of the Redstar Brick Co., at Larant, near Jamestown, N. Y., was destroyed by fire. The company has a number of plants in New York and Pennsylvania, and carry no insurance. Loss \$6,000.

The plant of the Clayton Pressed Brick Co., Greeley, Colo., burned to the ground, everything was destroyed, causing a loss of \$20,000. The buildings were insured. Senator W. L. Clayton owns the plant and will rebuild same.

The plant of the Standard Sewer Pipe Co., west end of Lexington ave., Rochester, N. Y., was damaged by fire to the extent of \$30,000, caused by an overheated kiln. The plant fully covered by insurance and will be rebuilt at once.

The Brandon Clarke's Brick Works at Vincennes, Ind., was destroyed by fire causing a loss of \$7,000. New machinery had just been installed. The plant had been in operation for 50 years and was the oldest in that section. It was partly insured and will be rebuilt, cause of fire unknown.

## BOUGHT 160 ACRES OF KAOLIN LAND

The Clay Products Manufacturing Co. of Ohio, finally closed with the Dunbar Lamar estate for 160 acres of kaolin lands, in Aiken county. The sale price was approximately \$30,000.

The company is to equip upon the property an immense industry for the manufacture of vitrified and ornamental brick, sewer pipe, terra cotta pipe and plain and ornamental china ware.

The company is one of the biggest in the world. They have plants at East Liverpool, Ohio, and business connections at Toronto, Ohio, and elsewhere.

They plan to make their Aiken county plant to the South and Southeast what their Ohio business is to the West and Southwest.

They have picked from their business a large number of young men, whom they will equip in the management of the Carolina works.

Construction will begin immediately. The amount of the further investment is not definitely known, but will go up into the hundreds of thousands.

## ACCIDENTS, DAMAGES AND LOSSES

Everett Leach, age 21, was crushed to death in the brick plant of the Love Wagon Co., at Durant, Miss.

A small cyclone partly destroyed the Livermore (Ia.) Brick & Tile Works and many of the farm buildings in that section of the country.

The steam shovel at the plant of the Western Brick Co., at Danville, Ill., was badly wrecked by a slide in the bank. Fortunately the men had just quit work.

Edward C. Schultz of Brazil, Ind., has been appointed receiver of the Carbon (Ind.) Clay Co. The plant was built about a year ago but never was operated.

Frank Bartlett wants \$10,000 damages for the loss of two fingers by the explosion of a dynamite cap which the boy found and picked with a needle until it exploded.

John Longbottom, age 60 years, who had been employed by the Alliance (O.) Clay Products Co., was instantly killed by being run over by an electric car while drinking.

Peter Lawrence of Leavittsburg, O., has begun action against the Trumbull Brick & Tile Co., for \$5,000 damages for personal injury sustained in a fall at the plant.

Elias Kailhman, working for the Barnstable (Mass.) Brick Company, was instantly killed by being buried under a bank of clay. He was dead when they reached him.

The right hand of Joseph Mistow, Jr., employed in the upper yard of the New England Brick Co., at Mechanicsville, N. Y., was badly injured while cleaning the knives of a brick machine.

Clarence Heaps was crushed to pulp in the cog wheels of the hoist at the plant of the Cambria Brick Co., at Johnstown, Pa. He was standing on the step of the hoister when he slipped and his foot caught in the revolving cogs.

At the Calgary (Alberta) Pressed Brick & Sandstone Co.'s plant the trolley car broke loose and shot down into the building where men were at work and so injured four of them it was necessary to take them to the hospital.

Tony Peters narrowly escaped death while buried under a bank of clay at the yard of the Hydraulic Press Brick Co., at St. Louis, Mo. He was located by other workmen by seeing the handle of his shovel sticking out of the pile.

## THE BENTON COMPANY PURCHASES A WHITE PRESS

The Benton Brick Co., at Benton, Illinois, have recently added to their plant a new White Press for making their high grade Red Pressed Brick from shale. Mr. F. O. Hamilton, President and Manager, is enthusiastic over the new machine, and the quality of brick they are making. They have been making Dry Pressed Brick for about four years, but started on a surface clay, having discovered the shale sometime after the yard was running. This made so fine a brick that they have had to double their capacity; therefore; put in the new Press this winter, which they purchased from the Chicago Brick Machinery Co. Mr. Hamilton reports the outlook for the coming season as very flattering. They have recently bought 600 tons of coal to keep on hand in case of a coal strike in that vicinity, which is threatened.

### THE WHITE PRESS

The users of the White Press are sending in letters like the following from one of the best known Dry Press Brick-makers in the country:

*Mr. John W. Sibley, Treasurer of the National Brick Manufacturers Association:—*

"Last summer we bought one of your new improved White Presses, and the same has been in operation for something like six months, and has given perfect satisfaction, and the brick made on it are equal in every respect to brick made on our other Press.

"We have been highly pleased with the simplicity of the operation of the White Press; and ease with which the Mold Boxes can be changed is a feature that is of paramount value to any concern making more than one kind of brick, where changes have to be made frequently and with rapidity, as is the case at our factory.

"Believe you are aware of the fact that we manufacture Red Brick from shale, and also manufacture Buff Brick and various speckled brick from fire clay.

"Another strong feature about the White Press is the fact that the weight of all the gearing rests upon the foundation, rather than upon the side frame of the Press. We understand that this is a feature possessed alone by the White Press.

"We take pleasure in saying that we are satisfied in every particular with our investment, and wish you much success.

"Yours very truly,

SIBLEY-MENGE PRESS BRICK CO.,

Per Jno. W. Sibley, Pres.

### H. DE JOANNIS NOW WITH BECHTELS LTD.

Bechtels Ltd., Waterloo, Ont., desire to announce to the clay workers of the United States and Canada that since May 1st, H. De Joannis, formerly editor of "Brick," Chicago, is now associated with them as manager of their Sales and General Publicity departments. Mr. Joannis is well known to clay workers on the North American continent, and his close contact with diverse clay working conditions will contribute extensively to the strength of the Bechtels' personnel.

### GERY PATENTS AND LEASE TO BE SOLD

Referee in Bankruptcy, S. E. Bertolet today granted an order of sale to Ed. D. Trexler, trustee of the Montello Brick Works, bankrupt, to sell at public sale the interest the bankrupt company has in certain patents for making clay brick, etc., held by A. A. Gery, with the license given the bankrupt for said use of patents, which were used within certain districts.

Also at the same time and place will be offered for sale the lease made between the Montello Brick Company and the Montello Brick Works, dated Jan. 1, 1903, for a period of 99 years, at the yearly rental of \$63,500.

The lease includes the plants at Vinemont, Montello, Perkio and Wyomissing, and certain other real estate, located in Berks and Montgomery counties, and also recorded in the same counties.

### ANOTHER BIG FACTORY FOR MASON CITY

Final preparations were finished and the organization completed of the Farmers' Co-operative Brick & Tile company which will erect this year a brick and tile plant that will be larger than any of the great plants which already make Mason City the greatest center in the world for the manufacture of drain tile. The capital stock of the company is \$400,000. Of all the great strides of progress already chronicled for this year in Mason City this one stands far in the lead. The officers of the company are Wm. M. Colby, president; G. C. Messerole, vice president; W. H. Gleason, secretary; W. R. Fleming, treasurer. The board of directors is composed of Wm. M. Colby, G. C. Messerole, W. H. Gleason, George F. Hughes, J. A. Sullivan, J. H. Brown, E. G. Dunn, F. J. Fleming and T. L. Fleming.

Prospecting has already been done on the one hundred and sixty acres of the Warren Clark farm which constitute the clay holdings of the company and clay of the very best composition and characteristics for the manufacture of brick and tile has been found there in limitless quantities. The east line of the property on which the plant will be erected is just one and one-half miles west of Main street on West First. The work of construction will begin at once and it is hoped that the plant will be making brick by next fall. The company will build cottages for the many men who will be employed at the great manufacturing plant and several innovations in the matter of handling the labor problem will be made by this company.

The holdings of the company lie along the right of way of the Milwaukee railroad a distance of half a mile on the south. The plant will be erected on the east side of the property near the center of its north and south dimensions. The organization of the company was completed in the offices of Glass & McConlogue, who have been chosen as the legal representatives of the company.

### NEW VAN BRIGGLE POTTERY WORKS NOW IN OPERATION

The first kiln of the new Van Briggles pottery works at the corner of Uintah street and Glen avenues, Colorado Springs, Colo., has been drawn, and the results achieved are highly satisfactory in every respect. There were more than 600 pieces of ware of various sizes and designs, comprising a thorough test for the big plant.

The new pottery works were recently completed at a cost of \$50,000, and the drawing of the first kiln was awaited with keen interest by the company, because it was more or less in the nature of a test. The test demonstrated conclusively that the perfection sought for has been attained. The average results are very high, assuring even better results in the future. At the present time the company is making a large stock of tiles for mantels and decorative panels.

It is the intention to have a formal opening of the big new plant in the near future, at which time the public will be invited to witness the working methods and to inspect the stock and new building. Some of the handsomest specimens of pottery in existence will be shown at this opening, comprising samples of the products since the plant was first established in the city.

### KANSAS AND OKLAHOMA PLANTS NOW ALL ALIKE

Guthrie, Okla., May 24.—A hearing has been given before the corporation commissioners on a proposed order to establish a mileage rate on brick in Oklahoma. At the present time the brick plants in the gas belt in Kansas and Oklahoma are put in one group and all have the same rate. The commissioners told the contestants that they intended to look at this matter from the standpoint of the consumers. Commissioner Love told them that if they could show that the mileage rate would give the people cheaper brick than they were now getting that would settle the matter.

It was evident that there was an inclination among the smaller plants to shut out the Kansas product, but it was very evident that the commissioners are not going to act on that principle. The big plants at Tulsa seemed to be satisfied with the present arrangement, and they are willing to take their chances with the rest on an even rate. The argument was used on the outside that if the mileage rate was put in the brick plants would divide their territory and each would be able to sell at a high price at home.

The rate experts for the roads claimed that the present rates were working very satisfactory and that the proposed rate would not enable them to compete with some of the Kansas roads running into western Oklahoma.

### BRICK WORKS SOLD TO SATISFY MORTGAGE

The Reese-Hammond Brick company's interests at Bolivar and in West Wheatfield township, Indiana county, Pa., were sold to satisfy a mortgage to M. R. Murphy, representing the First National bank, of Pittsburg. The consideration was \$120,250.

The property includes all the houses, lands, mines and plants, Nos. 1, 2 and 4. The sale was held on the premises and was conducted by the Union Trust company, of Pittsburg, who held first mortgage.

Several years ago the affairs of the company became embarrassed and the Westmoreland Savings & Trust company, of Greensburg, was appointed receiver. So well did it manage the business that two years ago it was given back to the company. The latter, however, failed to make good and the business went to the wall.

### MODEL BRICK PLANT UP AT PUBLIC SALE

The date for the public sale of the plant of the Ceramic Brick company, East Liverpool, O., has been set for June 8, at 1 p. m. The plant and all the personal property of the company will be sold on the lots where the plant is located. Included in the property to be sold are nine city lots, the buildings of the plant, the brick cars, pallets, shovels, and other materials and tools used about a brick plant. The plant is of two kilns capacity.

The appraisement was \$8,500 and the plant can sell for two-thirds of that amount. As the plant was an experiment in the using of broken saggars and other pottery wastes for the manufacture of bricks this experiment was pronounced a great success by the many interested people watching it, it is altogether probable the sale of the plant will attract quite a large crowd and that the bidding will be very spirited.

### ALLEGED DISCRIMINATION AGAINST NON-UNION BRICKLAYERS LEADS TO EXPULSION

The Builders' Exchange, Seattle, Wash., at its regular meeting formally dropped John Galber, who has the contract for the brick work on the big Rosenberg hotel, now under construction at the northeast corner of Eighth avenue and Madison street. Mr. Galber was expelled on the recommendation of the labor committee for alleged discrimination against nonunion or open shop bricklayers, although a member of the Builders' Exchange, which is pledged to support the open shop programme in this city.

The labor committee, upon investigation, found that the brick work on the Rosenberg job, while ostensibly an open shop, had been closed by Mr. Galber and the nonunion or open shop bricklayers were not put to work on the building, although repeatedly sent there by the exchange.

Mr. Galber is the second member of the exchange to be dropped on account of a stand taken on the open shop programme. The other member who was dropped was J. J. Franz, who has the contract for the Sullivan & Considine building at Third avenue and Madison street. He was dropped on the recommendation of the labor committee for entering into an agreement with the union bricklayers to do the work on that building.

### TESTS OF A LIQUID AIR PLANT

Bulletin No. 21 of the Engineering Experiment Station of the University of Illinois, "Tests of a Liquid Air Plant," by C. S. Hudson and C. M. Garland, has just been issued.

The plant on which these tests were made consists of a four-stage Norwalk air compressor and a Hanpion liquefier of the laboratory type. The compressor was driven by a 15 horse power Westinghouse induction motor.

The objects of the tests were to determine: (1) the power required to liquefy the air; (2) the cost and (3) the most favorable conditions for operating. The effect of the temperature and pressure upon the efficiency of the liquefier was determined; and incidentally, some data were obtained upon the keeping properties of liquid air in Dewar bulbs of different sizes, and under different conditions.

An interesting paragraph relates to the efficiency of liquid air as a medium in the production of power. The ratio of the available energy of the liquid air to the work required to produce it was calculated under various conditions, and it was found that under the most favorable conditions, not more than 2½ per cent of the work required to produce the liquid air can be recovered by using the air to drive a motor.

Copies of this bulletin may be obtained gratis upon application to the Director, Engineering Experiment Station, Urbana, Illinois.

L. P. BRECKENRIDGE,  
Engineering Experiment Station.

May 25, 1918.

### BRICK PLANTS RUNNING FULL TIME

D. H. Moore, cashier of the First National Bank of Athens, Ohio, while in Columbus on business, said that while the coal trade in the Hocking valley is dull the brick business is booming. All of the plants are in operation and thousands of brick are being made and shipped daily. The building brick plants are sending large consignments east while the paving brick plants have almost all the orders they can take care of.



### HOW TO BURN ILLINOIS COAL WITHOUT SMOKE

Bulletin No. 15 of the Engineering Experiment Station, "How to Burn Illinois Coal Without Smoke," by L. P. Breckenridge. The first edition of this bulletin was published in December, 1907, but on account of the large number of requests for it, a second edition of 10,000 copies has just been issued.

A few pages are devoted to the principles of combustion and the losses due to smoking chimneys, but the larger part of the bulletin relates to the constructive features of those boiler settings and furnaces that have been found practically smokeless in operation at the power plant and in the experiment station at the University of Illinois. The leading dimensions of the settings and furnaces are given and sectioned cuts show the general character of the settings. While the smokeless burning of Illinois coals furnishes the main discussion, the principles and methods explained apply equally well to the burning of all kinds of soft coal.

A large number of the copies already distributed have been requested by the smoke inspection departments of many of our large American cities.

Copies of this bulletin may be obtained gratis upon application to the Director, Engineering Experiment Station, Urbana, Illinois.

L. P. BRECKENRIDGE,  
Engineering Experiment Station.

May 25, 1908.

### BRICK MARKET NOT UP TO LAST YEAR

The current use of brick seems to be only about fifty per cent. of the output at the corresponding time last year. The supply is extremely large, and prices are sympathetically in favor of the buyer. It is difficult to quote prices this rain-stunted week, so safe are they. In all respects the market is taking the natural course, and the manufacturers the consequence, and the builders the benefit. In a word, Hudson river brick is being sacrificed, at prices less than cost, by manufacturers who are so situated that they must release their product. There are many who have shipped no material at all this year, not even when the market was paying \$5.50 to \$5.75 for good cargoes. Over one hundred million bricks are in the makers' hands, which, of course, means, under the present slight demand, a heavy surplus. Hards have sold for as little as \$4.50 per thousand by the cargo, but one cannot say whether the shipper will ever be willing to repeat the operation. Manufacturers have no hesitancy in admitting that the market is without form or comeliness, and that prices are the lowest in years. They prefer to have this generally known, rather than that builders and investors should overlook the opportunity to build at low cost. There are some who are working under long term contracts, others who have set their prices, less than which they will not sell; and a number who are letting cargoes go for what they can get. Under such circumstances quotations on Hudson Rivers continue minimal.

A. C. Ochs is making improvements to his Herron Lake (Minn.) Brick & Tile Works. A 100 horse-power engine, machinery and three kilns are being built.

### SLAVS MAKING GOOD

A few weeks ago a number of Slavs, about a score in all, came to the city on their way to the plant of the Charlotte (N. C.) Brick Company to work. Mr. S. S. McNinch states that his new men are making good with their work and are apparently satisfied. The officials of the company also say that they are receiving a much greater number of orders now than for some months, indicating an improvement in building work all over the country. Other sources of information also indicate strongly that the country is rallying to a large extent from its period of partial business stagnation and unrest.

### TESTS OF CONCRETE

The University of Illinois Engineering Experiment Station has recently issued Bulletin No. 20, Tests of Concrete and Reinforced Concrete Columns, Series of 1907, by Professor Arthur N. Talbot. This bulletin records experiments upon concrete and reinforced concrete columns, which have already become quite notable and which will have a marked influence in fixing the standing of certain types of construction. A feature of reinforced concrete in which engineers and architects are much interested is the column having the concrete hooped or bound with steel bands or spirals. Tests on this form of column reported from France and Germany indicate great strength, but the results have not been considered conclusive and many questions have been raised concerning its applicability to general construction. Engineers have wanted to know more of the action of this new combination of material. The tests here reported will therefore be welcomed by the engineering profession. One of the leading engineering journals in commenting on the importance of the results of these tests states that they bear on nearly every phase of importance of reinforced concrete columns. The tests go to show that in hooped columns the steel hooping does not come into action to any great extent before a load equivalent to the ultimate strength of plain concrete, or a little below, is reached, and that up to this point the action of the column is very like one of plain concrete. Beyond this load the column shortens rapidly and the deformation becomes very marked. The extreme amount of shortening is a great disadvantage. The amount of strength added by the hooping before ultimate failure is reached, is two to three times as much as the effect of an equal amount of longitudinal reinforcement. A discussion of the French and German experiments is made, and observations on Poisson's ratio and data on the phenomena accompanying tests of plain concrete columns are given. The work of Professor Talbot in reinforced concrete is well known, and this investigation is a further evidence of the importance of the work of the Engineering Experiment Station. The bulletin contains 60 pages.

Copies of this bulletin may be obtained gratis upon application to the Director, Engineering Experiment Station, Urbana, Illinois.

L. P. BRECKENRIDGE,  
Engineering Experiment Station.

May 25, 1908.

## SAND OR LIME BRICK OR BLOCK NEWS

The plant of the Indianapolis (Ind.) Composite Brick Co., is to be made June 5th.

A cement brick factory is now in course of construction at Rogersford, Pa., by B. F. Kerns of that place.

The National Sand-Lime Products Co., Spokane, Wash., has been incorporated with \$50,000 capital stock.

At a meeting of the creditors of the Concrete Pressed Brick Co., Cincinnati, O., M. E. Rinckhoff was selected as trustee.

The Atlantic Brick Co.'s works at May's Landing, N. J., after being idle for some months, resumed operations giving employment to over 100 hands.

E. L. Clarke and E. H. Congdon, Bornville, N. Y., have patented a cement brick machine and are preparing to make brick of a fine quality.

The Inter-Mountain Brick & Cement Co., Idaho Falls, Idaho, is now having its machinery installed, the plant will The Fort Wayne, (Ind.) Pressed Brick Co.'s plant is to be sold by its receiver, Dan Beers, and proof for all claims against company are asked for.

The Madelia (Minn.) Ciment Tile Factory are now turning out 2000 tiles daily, and the plant is to be enlarged. James N. McCarthy is the manager.

The American Stone Co., Waterbury, Ct., has been incorporated with \$5,000 capital stock. Incorporators are A. E. Green, Margaret H. Butler and N. J. Byrne.

The Camden (N. J.) Granite Brick Co., has been enjoined from disposing of its property. Another company had been incorporated to take over the company.

Action has been brought to foreclose a mortgage on the Watertown (N. Y.) Sand Brick Co., by the bond-holders. The late A. E. York was president of the company.

The Montana Granite Brick Co., Helena, Mont., has been incorporated with \$100,000 capital stock. W. R. Strong of Helena is secretary and treasurer. W. A. Humphrey of Boston is president, H. R. Thompson, vice-president.

The city of Luverne, Minn., is amply proud of the sand-lime brick factory which is taking nearly all trade from the other brick factory in that town on account of the quality of the goods. All that is necessary is energy to make brick.

The Business Men's Association of Port Jefferson, N. Y., are interested in starting a sand-lime brick plant at that place. James H. Dyatt is the inventor of a machine to make 100,000 brick daily. James R. Bateman vice-president of the Acme Roofing Co., of New York, will probably be the president.

The Sioux Falls (S. Dak.) Pressed Brick Co. are making 4,000,000 sand lime brick annually. They are as fine as are made anywhere in the United States, and Architects and Builders are anxious to get them. Edward Johnson is the vice-president and A. J. Johnson is secretary and treasurer.

The International Sand-Lime Brick & Machinery Co., 60 West St., New York, have just finished the remodeling and installation of their patent "Division Method" in the factory of the Penbryn Brick Co., at Penbryn, N. J., and have turned out brick of splendid quality which will sell at \$15.00 to \$20.00 at the factory.

## MISCELLANEOUS ITEMS

The Dexter (Kansas) Brick & Tile Co., has been incorporated with \$15,000 capital stock.

Thomas Bros., of Turners Falls, Mass., have begun brick-making in their Montague City yard.

Hans Westgard has leased the brick yard at Devils Lake, N. Dak., and has opened it and is now making tile.

After a five months shut down, the Ohio Mining & Mfg. Co., started its two plants at Shawnee, Ohio; 150 men are employed.

A new brick yard is to be started at Brookdale, Man. The company to be capitalized at \$40,000, Wm. Hales is interested.

Getchell Bros., Brewer, Maine, are making improvements to their yard that will increase its capacity from 1,500,000 to 5,000,000 brick annually.

The Le Roy (Kansas) Vitrified Brick Co., are now running their plant making shale brick, James W. Coggan of Bristol, Maine, is the manager of the works.

The Waynesburg (Pa.) Brick & Stone Co., have a force of 25 men at work at their plant on Smith creek. They are building a five track dryer and some up-draft kilns.

James Robichaud, who has been employed by Proctor & Bowie Co., at Winslow, Maine, has been secured by the Newbert-Noyes Co., of Augusta and will operate their yard.

Johnson Bros., at Granger, Wash., made their first shipments of brick one month earlier this season than last. The installation of new machinery hastened the early delivery of brick.

The Ohio Terra Cotta Brick Co., Fredericksburg, O., has been incorporated with \$50,000 by J. B. Hammond, A. J. Peterman, James B. Taylor, Robert C. Taylor, Ed. Elmer, S. Landes.

The new machinery for the Detroit (Minn.) Brick & Tile Co., has been installed and a spur track laid to the Soo Ry. and the Northern Pacific Ry. The capacity of the plant is 40,000 brick daily.

The Greenpoint Fire Brick Co., Brooklyn, N. Y., has been incorporated with \$50,000 capital stock. Incorporators are John Cooper, Huntington, N. Y., Andrew and Clarence Cooper, of Brooklyn Manor.

The Spalding Brick & Tile Mfg. Co., Guthrie, Okla., has been incorporated with \$75,000, directors are James H. Vann and Charles A. O'Connor of Spokane, Wash., H. W. Pentecost and S. Y. Pattison of Guthrie.

The Capital City Brick Co., Hartford, Ct., which represents a combination of brick manufacturers, has perfected organization. Michael Kane is president, Fred. H. Young, vice-president and secretary and Eugene D. Mills, treasurer.

The Newberg (Oregon) Brick & Tile Co., has been organized by Dr. H. A. Littlefield, president; Charles E. Fuller, secretary and treasurer and George H. Rogers, manager. They will build a new plant at Willamina.

The Pacific Coast Pottery & Terra Cotta Co., San Jose, Cal., have a large force of men at work building their plant. The company expect to be making sewerpipe in eight sizes by the last of June. Company is capitalized at \$500,000 and A. W. Hastings is president, and W. K. Jenkins secretary.

## CLAY RECORD.

Charles Smith, of Cornelius, N. C., is reported to establish a brick making plant.

The plant of the Nonpariel Stone & Brick Co., Homestead, Pa., owned by the Geo. M. Hall estate, has been sold.

The Barnum (Minn.) Brick Works have their drying sheds completed and will be turning out brick within a few days.

The Newbert-Noyes Co., Mt. Vernon Ave., Augusta, Maine, are cleaning up the yard and getting ready for the season.

The brick and tile works of W. L. McKissick & Co., at Carlisle, Iowa, has been completed and the plant will soon be turning out tile.

The Berlin Heights (O.) Brick & Tile Co. has increased its capital stock to \$15,000. C. A. Pecke is president and L. B. Ayres is secretary.

The Fitchburg (Mass.) Brick Co. has started up their plant, making \$40,000 brick daily. The machinery is operated by an electric motor.

The work on the plant for the Sheffield (Ia.) Brick & Tile Co. is progressing so rapidly that the plant will be ready for business by July.

After an idleness of more than a year, the J. H. Rose Fire Brick Works at Sharon, Pa., has resumed operations affording employment to 125 men.

The Speeceville (Pa.) Brick Co. has been incorporated with \$30,000 capital stock. Incorporators are A. S. Speece, D. F. Seiler and Herman and F. J. Harm.

A new 70 horse-power boiler has been placed in the Beale Tile Works at Paw Paw, Ills., to replace the one destroyed by the explosion a few days ago.

The Hydraulic Press Brick Co. works at Canandaigua are to begin at once making common brick and drain tile instead of high grade building brick as before.

The Astoria (Oregon) Clay Products Co. has been incorporated with \$15,000 capital stock. The incorporators are Lew Ogan, Norris Staples and A. Scherneckau.

The Manteno (Ills.) Brick Co. have been making one million brick a week since they started the plant this season, and expect to continue same throughout the season.

Henry Engholm has bought to acres of clay land adjoining his five acres in the Soldier Creek Valley at Ft. Dodge, Ia., and another new clay products company will be organized at once.

The Geneva (N. Y.) Brick & Tile Co. has been incorporated. The stockholders are Chas. J. Foster, Frank Starner, Joseph H. Banker, Charles Lester and Dr. James W. Skinner.

The Nowata (Okla.) Brick & Tile Co. has been incorporated with \$5,000 capital stock. Incorporators are M. F. Wilkinson, H. C. Campbell, John Earl, John Forsythe, J. A. Wetlack, W. T. Moore and J. B. Pollard.

The Pfolenhauer-Nesbit Co., New York, has been incorporated with \$100,000 capital stock to manufacture clay products, brick, etc. Incorporators are S. C. Martin and E. C. Clark, of Pittsburg, Pa., P. Pfolenhauer and F. C. Manson, of New York, and W. H. Nesbit, of Montclair, N. J.

John Berne has opened up a brick yard at Thompson, Mont.

Thomas Edwards, Ridgeland, Miss., wants information and prices for brick machinery.

Fred Von Seggen & Son, have installed a brick and tile machine in their plant at Farmington, Iowa.

The Densmore Brick Co., Lebanon, N. H., is successfully operating a new 50,000 capacity brick machine.

J. E. Mecusker of Jamestown, N. Y., is considering the starting of a \$25,000 brick making plant at Jacksonville, Ill.

There is some talk of reviving the brick manufacturing industry which formerly flourished at Cawker City, Kansas.

The Drury Brick Works at York, Pa., has been bought at receivers' sale by John Diehl, one of the heavy creditors.

The machinery has arrived for the Pocatello (Idaho) Pressed Brick & Mfg. Co., and is being installed as fast as possible.

The Minnesota Paving Brick Co., Minneapolis, Minn., has been incorporated with \$150,000 capital stock. Incorporators are Samuel J. Hewson, Peter J. Mayer and C. J. Rochwood.

The Auglaise Tile Co., New Knoxville, O., has been incorporated with \$10,000 capital stock by Geo. W. Hall, Ernest Holteamp, Wm. D. Arnett, Wilhelm Niemeyer, W. H. Lutterbeck, H. W. Eversman.

The Rich Hill (Mo.) Sewerpipe Co., has been organized with \$125,000 capital and will manufacture building and paving brick and sewer pipe. D. J. Fowler and G. G. Millgate are the principle owners.

## DIRECT HEAT

## DRYERS

FOR

**BANK SAND  
GLASS SAND  
ROCK, CLAY  
COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**  
68 William St. NEW YORK CITY

A stock company has been organized at Mayhew, Mich., to make brick and tile.

John Smola has bought the Central City (Ia.) Brick & Tile Works and is now operating same.

J. B. Green, cashier of the Farmers' State Bank at Quinton, Okla., will establish a brick and tile factory there.

John T. Neble of the Omaha (Nebr.) Brick Co. has been appointed by the mayor to a position of Park Commissioner.

J. E. Phillips of Seattle, Wash., will resume operations at the Pasco (Wash.) Brick & Stone Co. plant. Seattle parties are interested with him.

The Alpena (Mich.) Brick Works recently purchased from S. A. L. Warner by R. H. Collins is now in operation making 20,000 brick daily.

Tom Galbert of Farmington, Maine, has bought land of Edwin Sawyer and will rebuild his brick yard on same and will abandon the old site.

Lincoln Shackelford of Des Moines, Ia., has sold to Charles R. Morehouse of Des Moines the equipment of the Mellbourne (Ia.) Brick and Tile plant.

The Local Business Men of Ada, Minn., propose to form a stock company and put the brick making plant in operation and in addition install machinery to make tile.

Mathias Schwabe of Freeland (Pa.) states that he has everything in shape to organize the Freeland Brick Co. Samples of pressed brick have been made, which are very good.

McClatchey & Jacobs who purchased in February the Stone Island Brick Yard at Bay City, Mich., expect to commence the manufacture of brick as soon as the proper repairs are made.

The Sturgis (S. Dak.) Brick Co. are figuring on discarding their present equipment and install a dry press system. This will necessitate the increasing of the capital stock of the company.

The Farmers' Co-operative Brick & Tile Co., Mason City, Ia., has been incorporated with \$400,000 capital stock. They have 300 acres of clay lands, William Colby is president and W. H. Gleason, secretary and manager.

The American Clay Co., Terra Haute, Ind., has been incorporated with \$150,000 capital stock. Directors are Lee R. Whitney, John A. Dailey, James Luther, Ivy Luther, Fred D. Oakley, S. M. Cowgill and Saul C. Cowgill.

The Washburn (Wis.) Brick Works Co. has been incorporated with \$200,000 capital stock. Incorporators are M. A. Sprague, L. N. Clausen and B. Ungrodt. This is a re-organization of the old company operating the brick works there.

The Hollandale (Wis.) Brick Co. has been incorporated with \$25,000 capital stock by N. E. DeMuth, O. F. Campbell, H. J. Brazee, T. G. Thompson, Nels Severson and B. J. Hegland. Charles E. Baudisch of Ohio is also interested and will be the manager.

The plant of the Carbon (Ind.) Clay Co. built a year ago but not operated on account of lack of capital has been sold to Henry H. Titworth of Brazil and R. C. Heines of Chicago. The new owners who are practical clay products men will enlarge and open the plant in a short time.

A new brick yard is being operated at Alma, Ga.

The plant of the Bippus (Ind.) Tile Co., which burned down last winter, is now nearing completion.

The Osceola (Pa.) Silica & Fire Brick Co., after a long period of idleness, has been started up again.

The Bellaire plant of the Suburban Brick Co., Wheeling, W. Va., which recently burned is to be rebuilt at once.

The Laramie (Wyoming) Brick Co. has opened its plant which has been idle for a few months. C. H. Jones is in charge.

The Marion (Ind.) Brick Works have resumed operations after a shut down of over six months. Frank Cole is the able manager.

The Acme Brick Co., Canton, O., has re-organized and will resume in the near future. The Williams plant will also be operated by the company.

Irvona, Pa., is making an effort to have a brick works located at that place. A party of Hollidaysburg capitalists are interested in the project.

The Arkansas Finkler's Earth Co., Little Rock, Ark., notified the secretary of the state that the name had been changed to the Little Rock Refiners' Clay Co.

J. H. Osborne and S. S. Cook of El Paso, Texas, have been at Las Cruces, N. Mex., looking over the ground with a view of establishing a brick making plant there.

Lewis Desjardin, Lisbon Falls, Maine, has commenced operations on his brick yard, after installing a new machine which will increase the capacity of the yard at a less expense.

The Red Star Brick Plant, south of Warren, Pa., will be opened at full capacity in two weeks, with new machinery and a greatly increased capacity. J. M. Highbush will be in charge of the plant.

The Edwardsville (Kansas) Clay Mfg. Co. has established an office at 626 Minnesota Ave., Kansas City, Mo. D. F. Lindsay is vice president and manager and M. K. Fleming, sales manager.

The Ostrander (N. J.) Fire Brick Co. elected the following directors: F. G. Ostrander, J. K. P. Pine, F. N. Mann, Jr., J. W. F. Podmore and H. W. Gardinier to succeed S. A. Peterson, deceased.

The Wallen (Ind.) Tile Co. has been incorporated at Ft. Wayne, with \$1,500 capital stock. Directors are B. R. Harva, J. V. Fox, J. H. Wort, Henry Praeger, John Bushman, W. F. Hand and H. G. Bram.

The Hot Springs (Ark.) Clay Products Co. has been incorporated with \$1,000,000 capital stock. Lee Worthington is president, C. L. Shattuck, vice president; E. H. Johnson, secretary and J. B. Henderson, manager.

The Coffeyville (Kansas) Vitrified Brick Co., have started their plant with 100 men and as soon as all the machinery is placed they will add 50 more. This plant was recently burned and the machinery and buildings a total loss.

The Union Brick & Tile Co., Santa Monica, Cal., has started the construction of their plant. T. J. Griffin is the vice president and manager of the concern which is capitalized at \$200,000. Seventy-five men will be employed. Joseph Lech is president and H. B. Stafford, secretary.

**FOR SALE.**



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rails, at special prices.

THE ATLAS CAR & MFG. CO.,  
Cleveland, Ohio

### FOR SALE

Drain Tile and Brick Plant, including sheds and Kilns, and 55 acres of land underlaid with limestone. Or will sell machinery consisting of one 40 horse

**FOR SALE**

Drain Tile and Brick Plant, including sheds and Kilns, and 55 acres of land underlaid with limestone. Or will sell machinery consisting of one 40 horse power boiler, one 30 horse power engine, one J. I. Fate Machine with dies to 12 inch, one Raymond Disintegrator, one Hemming Automatic Tile Table, one Sole-cut Brick Table and dies, one elevator, Carts, Trucks, Wheelbarrows, etc. Address  
Mallow & Long

**FOR SALE CHEA**

AN H. M. Freeze Combination Brick and Tile Machine No. C. Good as new; guaranteed. All dies from 3 in. to 12 in. included. Also Brick and hollow block dies.

Address: REDFIELD BRICK AND TILE WORKS,  
Redfield, Iowa

### FOR SALE

Half interest and management if desired of brick and tile plant in Wisconsin city of 15,000. Lots of clay, face of bank @ it. perfect drainage, little top soil, sand bank adjoins. Burns 75 per cent select rich cream color brick. Coal distributing point.

Cheapest place to manufacture in the state - Splendid investment. Owners have other business.  
Address: Industrial Dept. W. G. Ry.  
Chicago, Illinois.

**FOR SALE**

Half interest and management if desired of brick and tile plant in Wisconsin city of 15,000. Lots of clay, face of bank 60-in. perfect drainage, little top soil, sand bank adjoins. Burns 75 per cent select rich cream color brick. Coal distributing point. Cheapest place to manufacture in the state. Splendid investment. Owners have other business.  
Address: Industrial Dept. W. G. Ry.,  
Chicago, Illinois.

**FOR SALE**

Complete set of Cleveland Koller-Bearing Cars.  
(about 25) for a Shreder 12-Track Tunnel Dryer,  
equipped as first double decked or rack cars. Also  
a lot of wooden racks. Bargain. Address:  
RICHMOND BRICK CO.,  
31 Hubert St., New York City.

Position by experienced and practical brickmaker as superintendent of a stiff mud or dry press brick plant. Experience in burning brick and care of kilns and machinery. Address: \_\_\_\_\_  
W. S. Care of Clay Record \_\_\_\_\_

**FOR SALE. CHEAP**—New and re-laying rails, 12, 16, 20 and 26 pound. For prices, address

ATLAS CAR & MFG. CO.,  
Cleveland, Ohio

Containing about 60 acres of heat clay without top soil, perfect drainage situated midway between Baltimore & Washington with necessary railroad facilities. Plant was partly destroyed by fire. Two stiff mud machines engines new steam plant, 16 tonnel hot air dryer with 240 steel cars, cracker and kilns remaining intact. Large house containing 8 room for superintendent. Purchaser could make this a modern, fully equipped two machine plant for a little money.

### CERAMIC PLANT FOR SALE

Receiver wants an offer for a three-kilo plant ready for turning out sinks, trays, etc.  
CHAS. K. LEAMAN, Receiver,  
Perth Amboy, N. J.

Y AND COAL FOR B

### CLAY AND COAL FOR SALE OR LEASE

Have 1,500 acres of the celebrated Center Co. fire

## CUTTERS FOR SALE

Several Automatic End Cutters and Brick Edgers  
for Chambers Brothers Brick Machine, cheap. In-  
quire  
ILLINOIS BRICK CO.  
Chicago, Ill.

[illegible]

**CASH FOR YOUR BUSINESS OR REAL ESTATE**  
If you want to sell send me full description and price. Confidential. Established in 1961. I bring prompt and excellent results. If you are interested

## WANTED

Second hand Smooth Roll Clay Crusher with capacity for 15,000 to 20,000 brick per day. Must be in first class condition. Give full description when writing. Address: RD. SHANNON, Shellburg, Iowa



## SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,  
Care Clay Record, Chicago, Ill.

## PLANT FOR SALE

Very desirable Brick and Tile property in James River, Va., complete with main plant, 25 thousand capacity practically new. Brand new soft mud out cast, including steam dryer, 80 thousand capacity automatic conveyor, new and commodious dwellings. Not a better equipped yard in the state, no other plant in the area. Excellent water supply and drain tile. Right rapidly growing cities furnish market for bricks net \$7.00 at kiln. Practical monopoly of best market in U. S. for drain tile to net \$20.00 per thousand for 4 inches. Immediate cash sale. No debt. No taxes. No union. No strike and labor can operate with steam dryer year round. Improvements have cost \$16,000 but I am not a brick maker and to the right party will sell low and easy payment.

W. L. JONES,  
Lockport, Kentucky.

**FOR SALE**

2 Buller, 5 valves, 3 inches, 15 feet long by 66 inches  
 horizontal.  
 2 Steam Gear Tempering Wheels, complete.  
 1 Steam Engine, 10 H.P., 12 inch cylinder.  
 1 American Clay Manufacturing Co. Brick and  
 Cutter, 12 inches.  
 1 Corrugal Sloss Steam Reprint 15 M. daily  
 1 C. Steele & Sons Brick Machine, Automatic  
 1 American "Jug Mfg Co No 10 Brick Machine  
 Automatic Rotary 20 M. Side Cutter or End Cut  
 1 Chamber Automatic End Cutting Machine, 30 M.  
 1 Chambers Automatic End Cutting Machine, 30 M.  
 1 Chamber Double Line Conveyor, made by Ohio  
 Ceramic Co.  
 1 Martin Drag Belt Conveyor, 35 feet long, 18 inch  
 belt.  
 6 Clay Bars Caris  
 12 Seta Caris Harmanes  
 12 Trucks  
 1 300 horse power Solid Vane Engine  
 1 Rider 1000 gallon Hot Air Pump  
 1 Yard Roller  
 1 Davidson pump, 2 inch discharge.  
 Address—NEW JERSEY  
 CARE OF CLAY RECORD

**FOR SALE**

Forty thousand wood pallets, 34 inch by 18 inch  
Address  
HENRY MARTIN BRICK MACHINE MFG CO.  
Lancaster, Pa

**POSITION WANTED**

A position as superintendent or manager of Brick or Sewer Pipe Plant, am a good handler of men and am an expert burner. Address:  
A. C., care Clay Record,  
Chicago, Ill.

## FOR SALE

Will sell brick plant that can manufacture Common, Hollow and Veneering Brick. Depth of clay is from 40 to 50 feet, and all good. Clay plant is in good order, and is situated in the Turin City.  
Address O. B., Care Clay Record, Chicago, Ill.

## SHALE CLAY FOR SALE

Have bed of red, chocolate and blue shales exposed full length of 3,500-foot railway cut and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow block, brick, paving block, tile, sewer pipe, etc. River. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Urban Railway Co.  
Des Moines, Iowa



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## THE RELATION BETWEEN LAND OWNER AND MAN WHO LAYS THE TILE \*

BY F. O. NELSON, ARMSTRONG, IA.

The relation of the land owner and the man who lays tile differs from the general question of capital versus labor. It is not so much a question of wages as it is one of skill and reliability on the part of the tiler, and of when, where, how, and by whom the work is to be planned and its efficiency or inefficiency decided upon. In the past most of this was given over to the tiler, whether he was competent or not. The result has been a large loss of time, tile and money, with the necessity of doing a large part of the work over.

The development of drainage practice and of drainage engineers now solves a large part of the question, especially in the case of drainage district work and the larger of the private jobs. But a large part of the planning is still left to the tiler, and in addition to that we have the question of carrying out the plan of the engineer with a short supply of able and competent men. Many a job has been carefully started only to have the time and material lost through incompetent or otherwise unreliable labor.

In district work the problem of getting good work done is taken off the land owner's hands by the employment of an engineer both to plan and to supervise the work, and by placing the tiler under a contract which he gives bonds to comply with. Some suggest that all tilers be placed under bonds, or be required to have a license or something of that sort. We do not consider this necessary; neither would it be of much help as long as other things are not changed.

The land owner must decide that good work is necessary, and that he will have it. He will then employ a competent engineer, or equip himself to plan and oversee his tiling. Having done this, another problem presents. He must secure a competent man to lay the tile. They are hard to find. In some neighborhoods there are none, or the price paid does not bring them out. This may be said of drainage engineers, too. They will not show up until there is some call for them, backed up by a reasonable sum

of money. This puts an individual or small number of land owners at a disadvantage when their jobs are not large enough to warrant them in going far to secure competent men. Where this is the case it seems that an effort should be made to get some one in the neighborhood, who is by nature handy with such work, to take hold of it, if only as a side line. Small jobs are not so complicated but what this is entirely practical. An expensive leveling outfit is not needed for them. Many farmers are situated so that they can profitably do their own tiling. With prices as they have been of late years many would do well to farm less or to hire farm work rather than tiling done, so as to look after it themselves, especially where the expense of securing an engineer to oversee it is large in proportion to the job.

Some say "they don't know how to lay tile," which is often true, but at the same time they could, from the proper source, learn more about the work in three days than many whom they trust the work to have learned about it in a lifetime. There are many who "flunk" under that best of teachers—experience. Accurate, reliable, plain and practical information may be secured in book form at an expense of a dollar or two, and the subject studied during leisure hours. Some of the things learned in this way will be a revelation to men who have been looked upon as experts for many years in some localities. More than that, they will enable one to do well jobs which they have not been able to handle at all. In other words, the farmer or his son may become the adviser of the tiler instead of looking to him and depending on him to put in, at the cost of much trouble and expense, improvements which are expected to be permanent, and are hard to modify, or to do over at less than the original cost.

These suggestions are made because of the impracticability of securing an expert at many times and places, and also because some means of proving him an expert is wanted. They apply especially where the county is comparatively well drained naturally so that few of the jobs are either large or complicated. Some men are doing their own work in northern Iowa rather than trust it to such men as are available.

For most cases the services of an engineer, for laying out work at least, is the only practical way. He may be dis-

\* Read before the Iowa State Drainage Association.

pensed with in the work of inspection if the tiler is known to be thoroughly reliable, or if the land owner is able to look after the work while it is being done, and to check it over to see that the proper grades and depths are maintained. He can do this by using the method that the tiler should employ, namely, the grade line or the "target" method.

The principal causes of poor work are ignorance and dishonesty on the part of the tilers. If these could be removed those which belong to the land owner would not be expensive or important, but since they cannot be under present conditions some of the employers' faults, or unused opportunities need attention. More study of drainage conditions and of drainage practice should be the first move. The temptation to get along with cheap work needs to be overcome. Good drainage is the kind that pays best. The idea that some men can tile property with no guide but running water must be gotten rid of. One might as well expect a mason to lay a foundation without his level and line.

Land owners, especially those living on their farm, might help each other much in this work by exchanging ideas, studying at clubs and institutes, by going together so as to make it easier to secure competent men to lay out and to do their work. Unless they unite to demand a high grade of work they will be a long time in getting it. If they do unite they can get about what they demand. They need to be more conscientious both about what they say and what they fail to say to each other when they have had experience with tilers of doubtful utility.

Too many men are working as independent contractors. They should work longer under some competent man. But they will not do this so long as they can get jobs of their own at the same price that competent men ask. Some old and reliable contractors have been working without their usual crews of late years, being unable to meet the prices paid direct to inexperienced men by the land owners.

Only men who are able and willing to sign and comply with a contract similar to that outlined in Bulletin No. 78 of the Iowa Experiment Station on drainage should be employed. Then the land owner should do his part by having the specifications clearly and definitely made out, and by delivering material on the ground convenient for use as it is wanted, etc., not forgetting to inspect the work himself or have some competent man do so.

The suggestion in the contract referred to regarding payments for work would save much trouble if followed. They provide that twenty-five per cent of the contract price be retained until the entire work contracted for is completed and accepted, and also that in case of failure to comply with the specifications or for refusal to correct faults when pointed out by the person in charge, the employer may declare the contract void, and may retain the twenty-five per cent mentioned above. Many land owners pay up even when they know the work is unsatisfactory "to avoid trouble," they say. The trouble is they thereby encourage the fellows who try to bully and humbug them.

### HE ASKS FOR WATER AND GETS OIL.

Oil has been struck in Streator, Ill. A well that was being sunk for Fawcett Plumb at his brick plant southwest of Streator, instead of furnishing water has decided to furnish oil. The well is right at the plant of the Streator Paving Brick Company, and was being sunk by him for the purpose of furnishing water for the plant, the expectation being to go down about 1,500 feet for a good flow of water.

### EXECUTIVE MEETING OF CANADIAN CLAY PRODUCT MANUFACTURERS.

On Tuesday, May 19, a meeting of the Executive Committee of the Canadian Clay Products Manufacturers was held in Toronto, Ontario, with President J. S. McCannell of Milton, in the chair.

An invitation from the City of Brantford for the convention this year was presented by the president, and it was decided to thank the city for the offer and to accept same if satisfactory arrangements can be made for the convention.

Serious complaint was made regarding the recent advance in freight rates on brick by the railroads, especially in time of depression, and a contraction of demand. It was also pointed out that serious discrimination was being made in favor of some centres to the disadvantage of others. Finally the following resolution was adopted, on motion of Messrs. Geo. Crain of Beamsville, and C. H. Bechtel of Waterloo, Ont.

"We, the Executive Committee of the Canadian Clay Products Manufacturers' Association, hereby resolve:

"That, on behalf of the Association we wish to place on record our earnest protest against the recently issued increase of rates for the transportation of bricks and of the several other clay products manufactured by the various members of this association as being unreasonable as it is unjust at this period of financial depression, especially when the railway companies found it necessary to reduce their own staffs and expenses.

"We also wish to emphatically protest against discriminations in the freight rates. For instance in the Province of Quebec, the railways have been charging only 2 3/4 cents per 100 pounds for a haul of 47.32 miles, while here in the Province of Ontario they have been charging 3 1/2 cents per 100 pounds for a haul of only 23 1/2 miles, which rate they have recently increased by 1/2 cent per 100 pounds.

"We submit that the western portions of these great railways have received bonuses fully as great for the building of these roads in Ontario as were given to them for the building of sections running into Montreal. We also submit that the increased freight charge for Niagara Falls and Welland, two progressive and rapidly growing towns, is arbitrary and unjust, while Montreal, which appears to have greater influence in the head officers of the railways situated there, can have its building materials transported from the manufacturers for a distance of 47.32 miles at a lower rate than they have been charging for less than half the distance in Western Ontario, particularly to the places named.

"Whereas, the instances of obviously unjust discrimination above cited are representative of similar conditions existing throughout Canada, and

"Whereas, such conditions are retardants to the progress of the clayworking industry and are prohibitive, in many instances, of the legitimate extension of our respective business enterprises.

"Therefore, we, the Executive Committee of the Canadian Clay Products Manufacturers' Association, the elected representatives of the clay-working industry in the Dominion of Canada, respectfully request that you, the Dominion Board of Railway Commissioners, give your earnest attention to this unjust and unbusinesslike rate discrimination and that you, by investigation, determine an equitable adjustment of rates on our products over every railroad under your jurisdiction."

The secretary was instructed to send a copy of this resolution to the railroads and if no action was taken, to send a copy of it to the Dominion Board of Railway Commissioners.

It was also decided to issue the "Report of the Proceedings of the Sixth Annual Convention" at an early date.

## ELECTRICITY AS A POWER FOR CLAY- WORKERS.\*

BY LAMBERT HAIGHT.

Your honorable secretary has requested me to read a paper on "Electricity as a Power for Clayworkers." I might add that I have been engaged in the electrical and brick business for nearly ten years, the larger portion of the time in the electrical business, and your secretary, knowing this, has seized the opportunity of placing my name on the program for a paper.

This is my first appearance at one of these conventions, but I hope it will not be the last, and if I can give you any hint on the subject which will be of benefit to you in any way, I shall be quite satisfied.

I do not intend to go into the design of electrical apparatus very deeply, but to try and show wherein clayworkers can use electricity to advantage. All are aware that the greatest cost of our brick plants is taken by salaries, employees' wages, and fuel used in the different branches of this business, and even though we do not require the power that a large steel works does, we must not overlook the fact that it is to our advantage to bring down, to as low a figure as possible, the cost of running our plant, and to do that is to have the most economical method of driving.

At the present day, steel works, cement works, cotton factories, and a large number of other industries, have adopted the electric drive instead of the mechanical drive, and have proven it to be quite a success, and, in looking over the method of driving our brick machinery, I find that a brick plant is about one of the best plants for economical driving by electric drive that is to be found. This is on account of having to have, with mechanical transmission, such a large amount of shafting, due to the machinery and other appliances being so widely separated. It is this great amount of shafting which is the cause of our large friction losses in the mechanical transmission. I am sorry I have no results of tests showing the exact amount of friction losses in a brick plant, but various tests which have been taken of other kinds of plants show losses to be on an average of 50 per cent., and this figure is also a very conservative one for a brick works, for it is only where we have the advantage of short shaftings and proper alignment of shaftings and bearings, and great attention given to the bearings, that we can get below the figure, and in most of the brick plants we do not get much below that.

It is not my intention to dwell on the friction losses of the mechanical drive, as most of you are fully aware of these losses, but to show you where we can advantageously use the electric drive.

We will take for supposition that we require 200 horse power to drive our brick machinery. The largest motors would be those for the brick machine, pug mill, pans and presses, and at the present day electrical manufacturers have brought the electrical machinery up to such a high state of excellency, that they would guarantee 90 per cent. efficiency for motors of a horse power that we would require for those machines. For the smaller motors for conveyors, etc., we would get 82 per cent. efficiency, and motors for pumps and blowers 86 per cent. efficiency, making an over-all efficiency of 86 per cent. This means, to get 200 horse power work out of our motors, we would require 233 horse power at the motor terminals, and, allowing two per cent. loss in line to the various machines required to be run, our generator would have to give out 238 horse power, or equal to 180 kilowatts. Any electrical company would guarantee us an efficiency of at least 90 per cent. for a generator of that capacity, which

shows our engine would have to develop 265 horse power, being a loss of 25 per cent., or an over-all efficiency of 75 per cent. This is placing everything at a moderate efficiency, and I do not doubt but what this could be somewhat improved upon, but it is having all the plant direct motor driven. I find, on closer observation, that it is necessary in some plants to have some shafting. Take a plant which has a large number of pans for grinding shale or granulators for clay, then it is advisable to have our motor direct coupled or belted to a counter shaft, and to run those pans or granulators from that shaft. This will increase our losses, due to the friction of that shafting, and will increase our horse power output from the engine, making it approximately 280 horse power instead of 265 horse power. This is quite a saving compared to the horse power our engine would have to give out, if we had the mechanical drive, and if we base our transmission losses in the mechanical drive as low as 40 per cent., it is in this case a loss of 53 horse power greater than the loss by electric drive. Assuming it requires five pounds of coal per horse power per hour, which is a low estimate for the average noncondensing steam engine in a brick plant, it is a saving of 265 pounds of coal per hour, or 2,650 pounds of coal for a ten-hour day.

In most brick yards our losses are that of the average shafting transmission, 50 per cent., and if we assume the same amount of coal per horse power as before, we would require to get 200 horse power work out of our machinery, 6,000 pounds of coal more than we would require by the electric drive. This is basing everything on the machinery being run continuously at full load, which is generally done in most of our up-to-date plants. For the benefit of those whose plants require only about 100 horse power in shafting transmission, the electrical apparatus required would be rather less efficient than the larger apparatus, but 80 horse power with the electrical drive would be all that is necessary, a saving compared to the shafting transmission of 900 pounds of coal per day.

This, I think, is well worth investigating, as the electrical companies would guarantee to us the efficiencies previously mentioned. The writer himself has tested a large number of motors which have shown high efficiencies, and most of the motors required in a fairly large-sized brick works would be large enough to demand a good efficiency. Let us look into the other advantages to be gained by using electricity.

No. 1.—Maintenance. The cost of maintenance is brought down to as low a figure as it is possible to get, and will prove quite a saving compared to that of the shafting transmission. This is easily seen by having done away with a large amount of shafting and belts which are always needing repairs and renewals, and which, if not kept in good condition, increase the friction losses to a large extent, and which, I pointed out before in this paper, would increase to a large extent our coal consumption. I might also say we have practically no danger of shutdown through breaking or slipping belts, and a decrease of the danger of belt driving to all men working near the machines is greatly eliminated, and this also adds to the comfort and appearance of the plant in general.

No. 2.—The ability to shut down any part of the plant without interfering with any other is of great advantage. This is due to the subdivision of the applied power, which is very applicable in a brick works, as all motors required are of a fairly large size and group driving cannot be successfully used, and if any machine breaks down, or any motor burns out—for the electric motor is not quite infallible in this respect—we have, by subdividing our power, in no way interfered with the working of any part of the plant, and this leads me to again mention our friction losses.

Suppose we have to shut down our brick machine, pug

\* Paper read before the Twenty-Second Annual Convention of the National Brick Manufacturers' Association, at Columbus, Ohio, February 3 to 8, 1908.



mill or presses for repairs or alterations. In the present condition with shafting transmission, we simply throw our belt on a loose pulley, but we have not stopped the belt or shafting, which shows us our losses are constant, just as long as the engine is running; whereas, if we had electric power, when we shut down any machine we cut off all power required for that machine, which shows that the loss in this method is a percentage of actual power used.

No. 3.—The cost of running, which, in the mechanical drive, is seldom thought of, can easily be found out in the electric drive. A few inexpensive instruments placed on a small switchboard will show to us just how much power any certain machine is taking at any time, and records of same can be kept for future reference; or, if it is desired, all the power can be recorded on the same instruments, thus making it easy to determine the cost of running by the amount of coal consumed, compared to the electrical units shown on the instruments. If anything goes wrong with any machine, this can easily be found out by the abnormal load shown on these instruments.

No. 4.—Electric drive has great flexibility for extending the plant without any alteration whatever to the existing machinery, and in conveniently and economically supplying any amount of power to any part of the plant. There are instances of this in our brick works, many having to have another engine put in to run various machines, such as a blower for utilizing waste heat from the kiln for drying purposes. A few are using blowers for draught for the kiln instead of a chimney, and, as quite a number of clay and shale banks have to be kept dry by pumping, any one who has experienced carrying long lengths of steam pipe will readily see the advantage of an electric driven pump. Further, any machine required for hauling or drawing shale or clay, no matter at what angle the incline should be placed, can easily be run from the same source of power.

No. 5.—Lighting. The plant can be lighted by incandescent or arc lamp from the same supply, without any increase of capacity beyond that required for the power used.

No. 6.—The location of the power plant need not be considered, but can be placed in the most convenient place, whether near the works or not. Having experienced what the aforementioned items mean to be driven, as they generally are at the present time, I particularly draw your attention to them.

In the electric drive we have two classes to choose from—that of the alternating current or the direct current system. In the alternating current we have a system of electric drive very applicable to the brick plant on account of being able to use induction motors, with squirrel cage rotors, which, being built of a rugged type, the rotor, or revolving part, being no more than copper bars embedded in an iron core and connected together by end rings. The stator winding or stationary part being well protected by the motor frame, we have a motor exactly suitable for driving blowers and conveyors, and, as this motor has no slip rings, it needs very little attention, only occasionally see that the self-oiling rings are working properly.

This type of motor is a very superior one where a constant speed is needed, and as it is to be continually running, as for blowers for drawing waste heat for dryer or for draught for kiln, and it is capable of taking 100 per cent. overload momentarily and 25 per cent. overload for two or three hours. It also has the advantage of a high efficiency at full load, which blowers and conveyors are generally run at. Dust, which in some yards is a source of annoyance, cannot materially affect this motor, it being well protected.

For the brick machine, pug mill, or presses, an induction motor, with a wire-wound rotor and controller for starting, is needed. This motor is also ruggedly built and it has the

advantage of the squirrel cage type in the large starting torque, which it can exert and which is a necessity on account of the uneven load on brick machines and pug mills, which often happens, due to the unevenness of pugging. It can also be arranged that different speeds can be gotten by using resistances, but our brick machinery when once installed is very seldom changed, and generally run all the season at the same speed. For the pans or granulators we have our choice as to which motor we install, and in this the writer prefers the squirrel cage type.

In the direct current system we have to use commutator motors, and these are the kind mostly used in driving plants at the present day. These motors have one great advantage in that we are able to get 25 to 40 per cent. change of speed very easily, by inserting in the field of the motor, a rheostat, commonly called resistance. This change of speed though is not of much advantage on a brick yard, but is of great importance in other works, and whatever change of speed we do require can easily be gotten by changing pulleys.

This class of motor is now being brought up to a high stage of excellency, and is now being designed to suit all classes of machinery, and to run under any condition which is in any way reasonable. The writer, though, is in favor of the alternating current motor for a brick plant, it being so ruggedly built and needs so little attention paid to it, but does, on no account, cast any reflections on the direct current system.

Coming to our source of power, we have what is known as a heavy and light load, i. e., much more power is needed in the day than at night. The only power required at night being just sufficient to keep the blowers running and the lighting of the plant. It is needless in this instance to keep a large engine running for this small amount of power, and it is as economical to have the power subdivided, have two engines and generators, and, by so doing, one can be a large set, so as to maintain all the day load, the other being large enough to take care of the load at night. You can have two equal sets, both running during the day, and each one shut down every alternating night. I might mention here that any one contemplating starting a plant should always take into account whether the plant be mechanically or electrically driven, that he should allow, when figuring out, size of engine, sufficient power for alteration or addition, unless that addition is so large as to demand another engine, for nothing is more injurious to machinery than to be constantly running overloaded.

A few words in conclusion to the user or those contemplating using electric power. If the plant is near a large town or city where electricity is supplied for power purposes, he can, if he so desires, take all his power from the electric company's mains. These power companies, which nearly every large city now has the advantage of, can, by supplying power in bulk, give it to the user at a very small cost. Columbus, the Convention City, has a rate of five cents per kilowatt hour; St. Louis, three cents per kilowatt hour; Rochester, three cents, and the Cataract and Conduit Company, at Buffalo, has a rate for block power of two cents per kilowatt hour for 1,000 hours or less per month. They also have a sliding scale down to less than one cent per kilowatt hour for 80,000 hours per month. By using power from one of these numerous companies, you have a saving in first cost, no engine, boiler, or generator is needed, and the power is always at your service night and day. You can always make arrangements for a special rate, based on the amount of power used per month or three months, and you will find that it is nearly as cheap, and in some cases quite as cheap, as if you had your own generating station. Prices such as are here quoted bring electricity within the reach of clayworkers, and, in my opinion, is deserving of your attention.

## NECESSITY OF CARE IN THE MANUFACTURE OF SAND-LIME BRICKS.\*

BY DR. E. W. LAZELL, PHILADELPHIA.

The subject of this address was chosen after much thought and was suggested by the writer's experience and investigations in the sand-lime brick field. During the past few years a large part of my time has been devoted to investigating the materials from which sand-lime bricks are manufactured, the method of manufacture, and the testing of the product. It is only by such investigations that the best method of procedure can be arrived at. This should be clearly recognized when you call to mind that the basic process used by all manufacturers of sand-lime brick was discovered by Dr. Michaelis, Sr., of Germany, and that you are all following in the lines laid down by him.

### MATERIALS.

Two materials are necessary for the manufacture of sand-lime bricks, namely, sand and lime, and as care must be taken with these we will start here.

**Sand.**—The sand best fitted for your purpose is a clean pure quartz sand. By this is meant a sand free from such impurities as clay, loam, lime, iron oxide or organic matter. The necessity for this is that during the manufacture a silicate is formed between the lime and the sand, and that any impurities present simply replace so much sand, and you have less of the material which enters into the silicate formation. Thus, any impurities in the sand, if not detrimental in themselves, act as a diluent.

The source of the sand can be any of those supplied by nature, such as dredged river sand, bank sand or crushed sand rock. A good brick can be manufactured from any of these materials.

**Lime.**—The lime best suited for the manufacture of bricks is a high calcium lime, thoroughly burned. Fortunately, this material can be procured in most parts of this country at a reasonable price. You should make it a point to thoroughly investigate the source of your lime and the method of burning. The lime must be thoroughly burned, but not overburned, and be of the kind known as quick or easy-slaking lime. The burning should be done in kilns so arranged that the fuel does not come into direct contact with the lime. This is especially true if coal is used as fuel. At the temperature of burning the ash of the fuel can enter into combination with the lime-forming silicates, which not only destroys the caustic value of part of the lime, but often these silicate compounds are injurious, as they only hydrate in the steam cylinder. The lime should also be as free as possible from clayey material, since this material replaces part of the lime and thus decreases its caustic value. Further, this clayey material at the temperature of burning enters into combination with the lime-forming silicates similar to those formed by the ash of the coal, which silicates destroy part of the caustic value of the lime. These silicates hydrate very slowly, and often only after the bricks are in the steam cylinder, thus materially injuring the quality of the brick.

I would strongly suggest to all manufacturers who purchase their lime to insist if they buy the caustic lime that it contains at least 90 per cent of caustic lime ( $\text{CaO}$ ); if hydrated is purchased, the lime should contain at least 70 per cent of calcium hydrate.

The effect of magnesia on lime used for the manufacture of sand-lime bricks is not so thoroughly understood, although the results of my investigations and others would indicate that the material is not as active as the lime, and that when present in large amounts it injures the strength of the bricks.

Another reason for insisting that the lime be burned in outside fired kilns in place of pot kilns is the danger of the lime becoming recarbonated in the pot kilns. At a temperature but little below that required to drive the carbon-dioxide out of the limestone the burned lime is able to reunite with carbon-dioxide forming again inert carbonate. This often occurs in pot kiln lime as partially burned pieces of coke and cinder are drawn below the burning zone when the lime is taken from the kiln and the gas they give off is reabsorbed by the burned lime. My own experience with partially recarbonated limes is that they are incapable of making a good brick. The same argument applies to lime which has become air slaked, therefore you should aim to use your lime in as fresh a condition as possible.

### METHOD OF MANUFACTURE.

Having now described the properties required in the raw materials, we will take up the proportion of the material from which the bricks are manufactured. Nature provides an abundance of sand, but seldom supplies it in just the condition required for use. Thus the sand must be taken as it is received and prepared for the purposes desired. If the sand as it comes to the plant is wet, it must be dried, and this drying is advisable in any case, as all sand carries a varying proportion of moisture, and if the proportioning of the materials entering into your bricks is to be kept constant, you will have to use dry sand. The sand as received is seldom of the right fineness; hence it is often necessary to screen it to remove the coarser particles. While quite coarse particles, if not present in too large an amount, do not injure the strength of the brick, they do injure the edges and corners, and hence the appearance.

In one of my previous addresses I touched upon the necessity of grinding a portion of the sand to supply the deficiency of fine material. If the sand has been screened the coarser particles which are removed by screening can be ground to supply the fine material. By fine material I mean sand of such fineness that it will pass a sieve having 10,000 meshes to the linear inch; that is, the largest particle of fine sand must not be over .0055 inches in diameter. There are two very important reasons why there must be present in the brick sufficient fine material:

1. This fine material fills the voids between the coarser particles, thus giving a denser brick which will have less absorption.
2. The fine sand is that which reacts with the lime in the hardening cylinder, forming the bond of the brick. The speed of reaction between the two solid substances is di-

\* Paper read before the Columbus Convention of the National Association of Manufacturers of Sand-Lime Products, December, 1907.

rectly proportional to the amount of surface in contact; the greater the number of surfaces, and hence the greater the amount of total surface, the greater the speed of reaction. Thus the presence of a sufficiency of fine sand increases the amount of silicate formed and the strength of the brick.

#### PROPORTIONING THE MIXTURE

The means provided for this end should be such that there is always introduced exactly the required amount of lime, fine sand and coarse sand. There should be no more guess work here than there is in the pharmacist compounding his prescription. Too much attention cannot be called to this necessity for a definite and accurate mixture, and one that will not vary from day to day, hour to hour or minute to minute. Mechanical means of proportioning should be used, and nothing trusted to chance.

When sufficient fine sand is not present in the material as it comes to the factory, which is generally the case, then it is necessary to grind a part. This being the case, it will be found advantageous to grind the lime with the sand either as quicklime and hydrated afterwards, or to grind the hydrated lime and sand together. All the sand required for the brick should not be ground, only that proportion required to be fine. If all the sand is ground, then the case is similar to where none is ground, and the bricks lack density and absorb a large amount of water. The same care must be exercised here in proportioning the mixture of sand and lime for grinding, to be sure that the proportions are always constant. A great advantage of grinding the portion of the sand required to be fine with the lime is that a much more even and intimate mixture is produced, and this mixture is composed of those materials which are later to unite in the hardening cylinder, forming the bond of the brick.

When the quicklime and sand are ground together it is necessary to hydrate them after grinding. Care and attention is required that sufficient water be added for perfect hydration, without any excess, which would give a damp mixture difficult to handle. In order that the hydration should be thorough it is advisable to store the hydrated material in bins or silos for 24 to 48 hours.

When the lime is hydrated previous to grinding with the sand the same care must be taken to assure complete hydration. If the hydrated lime is purchased the lime manufacturer must be compelled to deliver a perfectly hydrated material. The necessity of thorough hydration is because if unhydrated particles of lime get into the brick, these will later hydrate in the hardening cylinder and either disrupture the brick or greatly injure its strength.

Having now prepared your mixture of fine ground sand and hydrated lime, it is necessary to add the required amount of coarser sand. A mechanical measuring or weighing device should be used here in order that the portions shall always be constant. These mixtures, being now in the dry state, must be moistened in order to render them plastic for the presses. The amount of water added must be so controlled that an evenly damp material is fed to the presses, as it is impossible to make good bricks with a material which is now wet and then dry. This practically brings your materials to the presses, and I am afraid you are all weary with

hearing my insisting on exact proportions and care. My investigations, however, have convinced me that all this care is necessary and that eternal vigilance and exact proportions means the manufacture of good bricks.

The damp material should be fed as soon as possible to the presses; otherwise there is danger of its packing and setting in the conveying-device and giving trouble.

The object of pressing the material is to get it in shape and to force as much into a given space as is possible. The press therefore should be fed in such a manner as to assure the placing of the same amount of material in each mold. This should be evenly scattered throughout the whole mold, and all corners and ends filled. The pressure placed on each brick should be uniform and should be preferably applied from both the top and bottom. Also this pressure should remain on a sufficient length of time for the material to adjust itself in the mold.

From the presses the bricks are piled on cars, and care is required here not to injure their shape, and the full cars should be placed in the hardening cylinder as soon as possible. If the cars containing fresh bricks are left in the atmosphere for any length of time they begin to dry out, and the lime near the surface absorbs carbonic acid from the air, thus rendering it inert. This recarbonation of the lime on the surface of the brick injures their faces, making them soft.

In placing the cars in the hardening cylinders they should be subjected to as little jarring and jolting as possible, as in the damp state the bricks have but little strength.

As soon as the cylinders are closed steam should be turned on gradually. If the steam is turned on too rapidly, and the mass of bricks heated up suddenly, there is danger of their expanding and cracking or breaking. The pressure used in the cylinders may be from 100 to 150 pounds, it being remembered that, the lower the pressure, the longer the time they must remain in the cylinder. With a pressure of 150 pounds from eight to ten hours generally gives a good brick. The action of this high pressure hardening system was discovered by Dr. Michaelis, and by it a union is formed between the lime and the silica of the sand, resulting in a hydro-lime silicate. This silicate is the binding material of the brick and unites the particles together. Your aim, therefore, should be to produce the maximum amount of this material and to change all the hydrated lime into silicate.

Some years ago when I first began the study of sand-lime bricks I doubted the formation of this silicate. A large number of experiments were made in our laboratory, both chemical and microscopic, and these convinced me of the existence of this silicate in the brick. The results obtained from some of these investigations were given to you in my address at Detroit in December, 1905. These investigations prove clearly that the lime and the sand reacted in the hardening cylinder, forming a silicate. Before this time Dr. Michaelis' investigations led him to the same conclusions, and he went so far as to give definite formulas to these compounds. Dr. Michaelis states that the two most common compounds occurring in sand-lime brick have the following formula:

$5\text{CaO} \cdot 4\text{SiO}_2 \cdot 4\text{H}_2\text{O} \cdot 3\text{CaO} \cdot 2\text{SiO}_2 \cdot 4\text{H}_2\text{O}$ . He states that these compounds dry to a very solid and hard mass which equals, in strength and hardness, Portland cement. In describing this he states further "after all the water has been driven off at red heat, it becomes denser, and, when exposed to white heat, its density was further increased, and yet it had not lost any of the hardness and solidity that it possessed in the hydrated state." "All these compounds can easily be obtained by my high pressure hardening process."

"These hydro-silicates are the main constituents formed by a combination of all kinds of silica with calcium hydroxide, when submitted to a high pressure hardening process invented by me, that is to say, inartificial sand-lime brick. If the process is properly directed no uncombined calcium hydrate should remain, which simply requires a sufficient quantity of powdered quartz sand, intimate mixing and sufficient time for hardening. If a perfect sand-lime brick thus obtained becomes brittle when exposed to the fire, the cause of it is the sand, which increases its volume in the fire. In dealing with imperfect products, however, we have to add the unfavorable behavior of uncombined lime and carbonate of lime which may have been present from the start or has been formed in the course of time. The carbonate of lime and the free lime are converted into soft calcium oxide by the fire, which means a decrease in volume. The hydro-silicates likewise decrease their volume on giving off water of combination, but their decrease in volume is of no disadvantage, because they form only thin filins around the quartz grains. Moreover, the hardness which they possess in the hydrated state is not lost on dehydration by the heat. On the contrary, dehydrated calcium silicate is even denser and stronger."

It is only recently that as good an authority as Eckel of the United States Geological Survey has recognized the existence of these silicates. The first mention he makes recognizing their existence is in the late publication of the Geological Survey, "The Production of Lime and Sand-Lime Brick, 1906."

In further experiments undertaken in our laboratory we have been able to produce large quantities of this hydro-silicate by using very finely ground sand and hydrated lime. The mixture was pressed into the pats and exposed to the action of steam for a number of days. I, therefore, assume that you are warranted in stating that your sand-lime bricks are bound together with the hydro-lime silicate binder, which compound is produced in the hardening-cylinder by the action of steam.

From the above you will understand why too much attention cannot be given to obtain the correct amount of fine sand in your product; also why you should be particular to obtain lime and sand containing no objectionable foreign materials. This is clear when you remember that the strength and fire-resisting qualities of your bricks depend upon all the lime being combined as silicate, with no excess, and that as little carbonate of lime be present as possible.

Recently reference has been made to the similarity between sand-lime bricks and cement, and this is, in a measure, true. There is, however, no similarity until the cement

has been acted upon by water; the point in common being that the hydro-lime silicate formed by the action of water upon cement is similar to the compound formed by the action of steam upon finely ground sand and lime.

I trust I have made clear to you in this article the reason for the necessity of care and the use of exact proportions throughout the whole manufacture of sand-lime brick. Briefly summed up, the requirements are as follows:

Good sand.

Well-burned high calcium lime.

The correct amount of fine sand—that is, sand less than .0055 inches in diameter; preferably the grinding of the lime and fine sand together.

Accurate methods of proportioning the materials at each stage of the manufacture.

Good control of the amount of water used in hydrating; also amount added to the mixed materials to render them plastic.

A press capable of evenly and accurately filling the mold and exerting sufficient uniform pressure on each brick.

Sufficient pressure and time in the hardening cylinder to produce the maximum amount of the hydro-silicate binder.

If all these steps are followed out, the result will be a good brick. Further, the use of mechanical means to accomplish the above ends will not increase the cost of production and will result in your brick finding a more ready market.

#### INCREASING USE OF FRENCH BAUXITE.

Consul-General Robert P. Skinner, of Marseille, reports that on account of the increasing exports of bauxite the French customs gave it a denominated place in the statistical tables of 1907, previous to which it was entered with "undennominated minerals." He adds:

According to official figures, the quantity of bauxite exported from France in 1907 was 110,915 tons, valued at \$471,113. The declared value of French bauxite exported to the United States from the Marseille district during the years 1905, 1906, and 1907 amounted to \$50,162, \$55,787, and \$108,207, respectively.

The French deposits, which were the first to be discovered, continue to be the most important in the world, both in extent and value. The first valuable beds were found in the neighborhood of Les Baux, a few miles to the west of Marseille, which accounts for its name. At present the chief sources of supply are in the department of the Var, a few miles east of this city, from which export shipments are made. From a mineralogical point of view, bauxite is a non-silicated stony earth of the oxide family. It may be compared somewhat with corundum, and with emery, which is merely a variety of corundum. Indeed, one of the chief uses to which it is put in the United States is for the manufacture of an artificial corundum. It is also utilized in the United States for the manufacture of aluminum, alum, and various refractory products. This last application is of comparatively recent origin, and is by no means so extensively generalized as in France, although it is beyond doubt that as a refracting material for lining furnaces, in which the corrosive action of the basic slag must be resisted, the utility of bauxite is very great.

# WHILE BUSINESS IN THE CLAY INDUSTRY IS NOT AS GOOD AS LAST YEAR, AN EXTENSIVE INCREASE IS PROMISED.

East Liverpool, Ohio, June 14.—While the American pottery manufacturer has not been doing as much business this spring as he did a year ago, the outlook for an extensive trade in this line of the clay industry during the balance of the year is good.

The retail dealers and in many instances the jobbers have not been carrying as great a stock as a year ago. In the retail lines, such as the department stores and kindred establishments, the buyers have only been ordering pottery where it was absolutely necessary—this, of course, to make at least a creditable showing of stock. On the other hand, it has been known the managers of the crockery departments of the large stores have ordered only matchings from the salesmen when the latter were exhibiting in the hotels, showing new shapes in both dinner and toilet ware. New patterns or decorations have not interested a host of buyers as was the custom in former years.

The manufacturers have been advised that inasmuch as stocks are lower now than in past years, jobbers and buyers will come to the pottery market in goodly numbers during the next few months and they have been acting accordingly. Many manufacturers have, while the season has been dull, made immense stocks, these men being in a position to make immediate shipments, so far as white ware is concerned, and for the decorated orders, it will require but a few days to put any order through the kilns.

## ORDERING LESS IMPORTS.

The jobbers have not ordered as heavily on their import goods this year, and this is another instance wherein the American pottery manufacturers will profit greatly. Inasmuch as these jobbers failed to place orders last November with the foreign manufacturer for March shipment and so far neglected to do so, the jobber must look to the American potter for his goods this season.

Stock-taking in many parts of the American potteries is now in progress. Following this, and starting early in July, the pottery industry of the country can be looked forward to as being in a healthy condition. Manufacturers have been receiving many inquiries concerning the time in which shipments can be made, also concerning prices. Concerning the latter, the manufacturers are holding to the old prices, and there will be no reduction in selling lists during the present season. It was not long ago that some of the manufacturers entertained the view that prices on numerous articles of pottery should be advanced, but so far no formal action has been taken.

In other lines of the clay industry in the western center, trade conditions are looking far better than at any time during the past four months. In the brick business, the manufacturers anticipate no small amount of building during the next few months, and while many factories are now at work on this commodity, the plants are enabled to turn out a greater volume of business than before. Some good orders have already been placed, and other large business is being bid for throughout the Ohio Valley.

## SEWER PIPE TRADE FAIR.

With the sewer pipe manufacturers, while trade cannot be exactly considered dull, there is room for improvement, and manufacturers anticipate such a turn in the trade at an early date. One of the largest sewer pipe contracts let so far this year went to Panama, and the business was let to a Texas concern. Several northern manufacturers bid for this order, but there was a delay in receiving advices concerning freight rates, and therefore bids could not be submitted in due time. Many small contracts are being let for pipe, and this part of the clay trade can be classed in a quite healthy condition.

Because of the cheapness of labor in many sections, there will be more or less municipal improvement started at an early date, and this will be a boom to the paving block and paving brick manufacturers.

There is no great stock of paving bricks and blocks on hand, and while many factories have been running full time on these two lines, there are several plants in the Ohio Valley which are idle. With a little more ordering from contractors, it would be possible to start all of these idle factories.

The electric porcelain business at this time seems to be enjoying a good run. All the western plants are in operation at least over 50 per cent. Increased building activity would help this end of the trade no small amount. During the past two years a number of electric porcelain plants have been erected in the East Liverpool district, and where two factories formerly looked after all of this sort of business, at least six plants are now bidding for the electric porcelain trade.

A new branch of the clay industry has taken root which gives promise of having long life. This is the making of porcelain attachments for gas lights, both upright and inverted mantles. A good article is being produced, and some of the potteries have got into this trade, a small space in a plant being all that is needed to turn out the little rings and uprights. As this product is fired at the same time the ware is, the manufacturers are not compelled to go to the extra expense of erecting new kilns for this purpose.

## LEASE BRICK PLANT FOR THREE YEARS.

At a meeting of the Kaaterskill Brick Company, Albert A., Frank S. and William A. Gery closed a three-years' lease for the plant on the Hudson, with an option to purchase.

The plant was formerly allied with the Montello group and was closed down last fall. It consists of 16 down draft kilns, 1,000 horse-power boilers, three Corliss engines and a capacity of 30,000,000 brick a year with a large deposit of shale and clay.

F. S. Gery went on to Kaaterskill and will be joined by his brothers next week, when arrangements will be made to put the plant into operation.

Mr. Gery stated that the business would be incorporated as the Glen Gery Brick Company of New York, with these directors: Frank S., William A. and Albert A. Gery.

**ANOTHER COLLAPSED BUILDING.**

Spite of the assertions of the various engineers employed by the reinforced concrete construction companies, that reinforced concrete has gotten beyond the experimental stage and is now an easily handled and perfect mode of construction, the roll of fatal collapses of concrete buildings keeps steadily lengthening. The very latest one, a bad one, occurred at the nation's capital on June 9th. There was nothing particularly new about the manner of collapse. It has not yet been determined by the official investigators whether the concrete was too weak, the floors over-loaded, or the centering removed too soon but it must have been due to one of the inherent faults of the mode of construction. All the other collapses, at Minneola, L. I., at Rochester, N. Y., at Long Beach, Cal., at Elyria, O., etc., etc., are attributable to one or all of those same causes and all the collapses that will occur hereafter can as unerringly be traced to similar ones. Suffice it to know that in this one two lives were crushed out and four workmen were seriously injured.

Washington has been rather looked up to by the other cities as having a particularly good system of government, adequate building laws and skilled officers to enforce them. But this collapse would tend to put that city in another light. It apparently is no saner than any of the others. In fact upon investigation we find that many cities, particularly those in the West, have far more stringent building regulations in regard to reinforced concrete and other experimental modes of construction than has Washington. In some cities a special inspector directly responsible to the city is placed upon each such building in course of erection. Everywhere it seems to be tacitly if not expressly acknowledged that reinforced concrete construction is the most hazardous mode of building and especially needful of most rigid inspection by the authorities. As things are now no building can be erected without a city's consent and approval; its approval of a concrete construction must make it liable as an accessory for any damage that may accrue to a citizen by reason of the inadequacy or faultiness of such construction. It would surely behoove every city in the land, therefore, to redouble its efforts in the direction of safe buildings, even to the drastic limit of absolutely prohibiting a mode of construction that has been the cause of so much loss of human life as has some of the systems of reinforced concrete that are now in vogue.

**LAST OF HYDRAULIC WORKS AT FINDLAY.**

The closing chapter in the history of the Hydraulic Pressed Brick Works was written when the last of the brick was shipped from the plant. This ends all work around the once busy factory and there is little probability that operations will ever be resumed.

It was just about a year ago that the brick company, which owned the plant, decided to pull out from here, and since then all the manufacturing machinery has been shipped away.

**A NEW AND DANGEROUS CONSTRUCTION.**

One of the best-known and highest authorities among construction engineers was recently asked why he opposed the growing tendency toward reinforced concrete construction of buildings. In reply he used this very apt parable: "You have no doubt seen the circus or vaudeville stunt of standing a man up against a board fence and having an expert get off twenty-five or thirty feet from him and shy knives and daggers and hatchets in so skillful a manner as to outline the man's shape on those boards with these exceedingly sharp and dangerous weapons. It's a fascinating trick. The 'victim' must feel a bit nervous spite of the confidence he may have in the expert, for the latter, clever as he may be, sometimes makes a slip and there is certainly always a danger that he will do so. But suppose you stand that same man up in such position and let every Dick, Tom and Harry shy a knife at him, how much of him will there be left to tell the tale? So it is with concrete. Theoretically, it is a fascinating mode of construction and apparently quite simple. In the hands of a very careful expert it can be well done, but even with him it is always an extremely hazardous medium for it depends upon so many conditions and is susceptible to so many accidents, and the least little slip in one detail vitiates the whole thing, that even in the hands of such an expert the chances are about ten to one that something will go wrong. But what must we expect when every builder in the country feels himself perfectly competent to handle a medium that perhaps not more than fifteen men in the entire land really know anything about? It is any wonder that there are so many and such fatal collapses of reinforced concrete buildings, and are you surprised that I should not for a moment consider concrete unless I could personally mix it and put it in place and do all there is to be done to it myself? It is not work that you can delegate to others and particularly to the cheapest of cheap labor. And the only reason preference can ever be given to concrete is that it is cheaper than the standard steel, brick and tile construction. And to make it cheaper it has to be done by the cheapest labor. Hence the enhanced danger, and there you are."

**REPORT PLEASAS KAOLIN MEN.**

The kaolin men of Augusta, Ga., and vicinity are very much pleased over the report of a special congressional committee appointed some time ago by Speaker Cannon to look into the matter of the proposed taking off the duty on wood pulp, kaolin and other material used in the manufacture of paper. The majority report of the committee was to the effect that the duty remain and this means that the clay bed men of the vicinity of Augusta will secure better prices for their products.

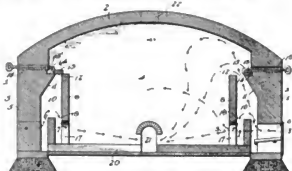
While it is true that the report of the committee is not relished by the buyers of paper, still the local kaolin men who employ more than 1,000 men, are jubilant over the report and hope that the report of the committee will be adopted by congress and that subsequently it will become a law.

# NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

885,954. Brick-Kiln. Sherman T. Rawles, Galesburg, Ill. Filed Apr. 27, 1906. Serial No. 314,033.

In a combined up and down draft kiln, the kiln body having a plurality of furnaces each of which consists of an outer wall section having a fire box, an interior flash wall spaced from the outer wall section and forming with the same an intervening circulating flue having top and bottom flue openings respectively, means for covering and uncovering said top flue opening, and an upright baffle wall interposed between the flash wall and the fire box and projecting above the plane of the crown of the latter.



In a kiln of the class described, the kiln body having a floor provided with a central longitudinal outlet flue and a plurality of open lateral bed flues communicating therewith, said flue body being further provided with a plurality of furnaces each comprising an outer wall section having a fire box and at its inner side formed with an inwardly deflected flue wall, an interior flash wall spaced from the outer wall section and forming with the same an intervening main circulating flue having top and bottom flue openings, said flash wall being provided at its lower end with an arch flue, an upright baffle wall interposed between and in spaced relation to the fire box and flash wall in the horizontal plane of the arch flue of the latter, said baffle wall projecting above the plane of the crown of the fire box, and a damper slab arranged for support by the flue wall portion of the outer wall section and adapted to be shifted over and from said top flue opening.

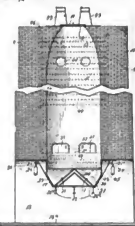
885,720. Firing-Tool for Brick-Kiln Furnaces. Edward H. Callaway, Westfield, N. J., assignor to The American Clay Machinery Company, Bucyrus, Ohio, a Corporation of Ohio. Filed May 8, 1907. Serial No. 372,526.



The combination of a handle, a transverse scraper secured thereto, said scraper having projecting wings with inclined inner opposing faces, and sliding means at the forward end of the device for the purpose of enabling it to move easily over the surface on which it acts, said sliding means having rods entering passages in the scraper, and means for holding said rods in place so that the runners may be adjusted relatively to the scraper.

885,719. Lime Kiln. Patrick J. Buckley, Waukesha, Wis. Filed May 11, 1907. Serial No. 373,112.

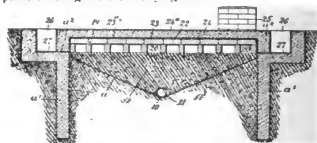
A lime kiln comprising, in combination, a structure having a vertical chamber, the walls of the chamber adjacent its lower end being provided with cooling ducts, means for heating material contained in the upper portion of the chamber, fuel bins, and flues receiving from the cooling ducts and traversing the interior of the bins.



A lime kiln comprising, in combination, a structure having a calcining chamber and a vertically-disposed chamber adjacent thereto, a fuel bin arranged within the last-named chamber to provide an up and a down flue at opposite sides of the bin, connection between the flues below the bin, and connection between the down flue and the calcining chamber.

886,251. Drying-Floor. Henry O. Robinson, Brookline, and Christopher Steadman, Salem, Mass. Filed Jan. 23, 1908. Serial No. 412,229.

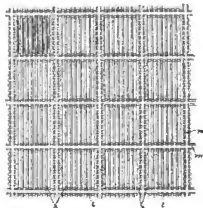
A drying floor for green bricks, consisting of a natural bed, an impervious wall surrounding said natural bed, tiles laid upon the said bed, forming longitudinal and transverse channels, a tile covering for the tiles so laid, and a moisture-proof covering for the overlying tiles.



In a bed for drying green bricks, a natural foundation, an impervious wall surrounding said natural foundation, a chamber formed at one side of the foundation, a heating agent introduced into the said chamber, a series of bricks laid in parallelism on the said natural foundation, forming between them transverse and longitudinal channels in communication with the chamber into which the heat is introduced, a series of bricks laid in close order, located upon and over those that are supported by the natural bed, a grouting of cement covering the closely laid bricks, a waterproofing covering the grouting, a bed of concrete covering the said waterproofing, a flue connected with the channels formed by the bricks laid on the natural bed, a drain pipe located in the said natural bed, and a gutter formed around the said bed.

885,065. Refractory Block For Building Purposes, Frederick B. Marvin, Paterson, N. J. Filed Jan. 30, 1905. Serial No. 243,259.

As an article of manufacture for incorporation in concrete and other plastic artificial stone substances, a body formed of refractory material and comprising two layers cemented together, each layer having semi-spherical recesses on its inside face registering with corresponding semi-spherical recesses of the other layer, and said body being



weakened on its outside surfaces along intersecting sets of lines disposed relatively between said recesses, substantially as described.

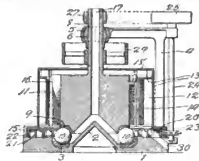
886,258. Process For Hardening Artificial Stone, Erich Schwaneberg and Albert Rinne, Hannover, Germany. Filed Dec. 4, 1906. Serial No. 346,308.

The process of hardening artificial blocks containing hydrate of lime which consists in treating the same with carbonic acid gas at a temperature between  $35^{\circ}$  and  $110^{\circ}$  C. and capable of taking up moisture.

The process of hardening artificial blocks containing hydrate of lime and suitable carbonates which consists in treating the same with carbonic acid gas at a temperature between  $35^{\circ}$  and  $110^{\circ}$  C. and capable of taking up moisture.

The process of hardening artificial blocks containing hydrate of lime and suitable coloring matters, which consists in treating the same with carbonic acid gas at a temperature between  $35^{\circ}$  and  $110^{\circ}$  C. and capable of taking up moisture.

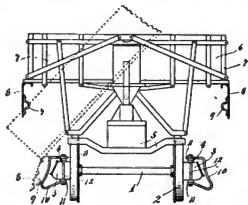
885,211. Pulverizing-Mill. Levi D. York, Portsmouth, Ohio. Filed May 13, 1907. Serial No. 373,328.



In a pulverizing mill, a cylindrical driver, a shaft extending from the top thereof, the driver and shaft having a cylindrical bore, a base, pulverizing rings carrier by the base and driver, balls running between the rings and carrying the driver, spiral vanes running from top to bottom of the cylindrical surface of the driver, screens surrounding the driver, a sleeve on the shaft forming a sliding fit and having a spherical member, and a stationary support having an internal spherical surface engaging the spherical member.

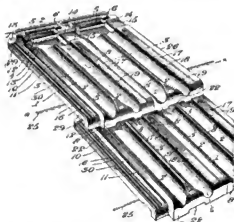
886,761. Dump-Car. Herman B. Earling, Warren A. Parker, and Robert Hughes, Minneapolis, Minn. Filed Dec. 19, 1907. Serial No. 407,147.

The combination with a car having a body centrally pivoted for lateral dumping movements in either direction, of guard boards hinged to and depending from the outer edges of the bottom of said body, and means carried by the truck arranged to limit the dumping movement of said car body and the inward swinging movement of said guard board on the lowered side of said car body, whereby the dumped load of dirt is prevented from running onto the track, substantially as described.



The combination with a car having a body pivoted for lateral dumping movements, of guard boards 8 hinged to the edges of the opposite sides of the bottom of said body and provided with bearing lugs 9, of guides in the form of metal strips 10 having laterally bent ends 11 bolted to the side frames and journal boxes of the truck of said car, the guide strips 10 being located for engagement with said bearing lugs 9 and being arranged to swing and hold outward the guard board on the dumping side of the car, substantially as described.

885,663. Roofing-Tile. Carlos N. Bruzard, Peekskill, N. Y. Filed Apr. 13, 1907. Serial No. 367,000.



A roofing tile provided with side flanges to establish an overlap with adjoining tiles of like formation and also provided with drain channels in its upper surface and a longitudinal groove in its lower surface, and a projection within said groove in the bottom of the tile having a hole for the reception of a tie wire connecting with the adjoining tiles, which hole is located above the plane of the lowermost surface of the tile, for the purpose specified.



## CLAY RECORD.

PUBLISHED SEMI-MONTHLY BY THE

## CLAY RECORD PUBLISHING COMPANY,

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GEORGE H. HARTWELL, EDITOR

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Vol. XXXII.

JUNE 15, 1908.

No. 11

"I like to read American advertisements. They are in  
themselves literature, and I can gauge the prosperity of the  
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the  
very time that advertising should be the heaviest. Ninety-nine  
out of every hundred merchants advertise most when there is  
least need of it, instead of looking upon advertising as the panacea  
for their business ills.—John Wanamaker.

Hard cash is awfully hard to do without.

The iron in some men's blood must be Pig iron.

The road through a difficulty may be rougher, but it is  
always safer than the road around it.

When you get something for nothing the something and  
nothing are nearly always synonymous.

It's all right for a man to be a dreamer of dreams pro-  
vided he makes up occasionally and gets busy.

How it jolts a man's self-conceit in after years when he  
happens to come across a love letter he once wrote to his  
wife.

Did you ever think that this was the time to advertise  
rather than to cut the ads down? Think it over. Cut your  
other appropriations but enlarge the advertising appropriation.  
It will pay.

Did you send in that subscription? We want it and want  
it now. We can get more value out of a dollar during June  
or July than out of several of them later. Just think!  
Twenty-four numbers of the CLAY RECORD for one dollar,  
and if you are not satisfied at the end of the period your  
money will be refunded.

ILLINOIS BRICK COMPANY MAKING GOOD  
SHOWING.

Steady accumulation has advanced the price of Illinois  
brick stock from 30 to 35 within the past fortnight. The  
company is selling brick at an average not higher than \$5,  
but business is good so far as the volume of sales is con-  
cerned, and, according to a director, the company is making  
some money.

At the recent meeting of the board dividend matters were  
not discussed. When the company was paying dividends the  
disbursements were made quarterly, although it is explained  
that there never was a fixed rate nor regular intervals at  
which the distributions should be made.

General conditions in January made it a matter of good  
policy to defer payments, which, by custom, had fallen due  
at that time. The same is true of dividends considered due  
at this time. The company will in all probability be in a  
position to pay a dividend of some sort later in the year, even  
if the low prices for brick continue to prevail. Its financial  
and physical condition is said to be strong, and there are  
some insiders who have thought well enough of the stock  
to pick it up at current prices, which they consider low.

HAS LOWEST PRICED BRICK MARKET IN  
MIDDLE AND SOUTHERN STATES.

In recent years the demand for brick has increased prob-  
ably more than any other building material. Clay products  
are entering into the construction of homes to a greater ex-  
tent than ever before, as people who have built homes will  
testify. Nashville, Tenn., leads all other Southern cities as  
a brick producing point, and during the past thirty years the  
business has greatly increased. There are several of the  
most up-to-date brick factories in that city, which not only  
supply the Nashville trade, but also to Kentucky, Alabama,  
Georgia, Arkansas and Florida. Nashville has the lowest  
priced brick market in the Middle and Southern States, and  
it is estimated that the business in this one line will alone  
amount to more than one million dollars, while one thousand  
laborers are given steady employment.

The largest brick factories in Nashville are the Fulcher  
Brick Company, W. G. Bush & Co., W. D. and C. H. Le-  
Sueur and E. T. Lewis & Co. The Bush Brick Co. has two  
brick yards, one in Northeast Nashville and the other on the  
Cumberland river below the lower island. W. D. and C. H.  
LeSueur and the Fulcher Brick Co. have yards in South  
Nashville and the yards of E. T. Lewis & Co. are in East  
Nashville.

In addition to manufacturing brick several concerns han-  
dling what is known as side lines, and while formerly these  
side lines were of little importance, they have increased so  
much of late that they are now no small item. For exam-  
ple, E. T. Lewis & Co. handle sand in large quantities and  
also all kinds of building material.

The most improved machinery is needed in this business  
like all others, and instead of the old-time horse and clay pit,  
the modern brick yard is equipped with steam shovel and  
brick making machinery. Many attempts have been made  
to get out a product that will take the place of brick and at  
the same time be as durable, and while such attempts have  
been more or less successful, still the demand for brick is  
on the increase.

## OBITUARY

Mrs. A. S. Speece, wife of A. S. Speece, president of the Speeceville Brick Mfg. Co., died of paralysis at her home in Speeceville Pa. She was 60 years of age.

Mrs. Ida L. Harvey, age 35, wife of W. J. Harvey, a pottery manufacturer of New Castle, Pa., died of heart disease in a room at Hotel Henry in Pittsburg, while her husband was at lunch.

Seth H. Childs, aged 88 years, an old pioneer of the state, died at Kaukauna, Wis. In 1845 he operated a brick yard in Milwaukee, later operated one in Menasha and later one in Kaukauna.

F. D. Kitchel died at his home in East Liverpool, O. He was connected with the large pottery at Newell, W. Va., across the river from East Liverpool. The plant was closed down until after the funeral.

Captain C. W. Boynton, founder of Boynton Beach, N. J., died at his home in New Brunswick, N. J., aged 73 years. He was engaged in the clay business around Perth Amboy and was president of an electric company.

James J. Campbell of Wilkinsburg, Pa., died at his home, 468 Swissvale Ave., aged 62 years. He was a well known business man and for years was identified with the Enterprise Brick and Stone Co., of Edgewood, and had extensive real estate interests in Swissvale.

Arthur Koppel, founder of the Arthur Koppel Co., died at his home in Berlin, Germany. He was born in Dresden in 1851 and started in business at the age of 17 years. He employed several thousand men in the several plants owned by the company.

## FIRE! FIRE! FIRE!

The engine and drying room of the Booth and Flinn Brick Works on the Hill at Pittsburg, Pa., were damaged by fire causing a loss of \$4,000, which was partly covered by insurance.

The plant of the Granite Brick Company at Glen Falls, N. Y., was damaged by fire which was caused by spontaneous combustion, the blaze starting in a pile of shavings. It's fully insured.

The plant of the Potlach Brick Company at Potlach, Idaho, was damaged by fire. The loss is several thousand dollars. Same will be repaired at once. Joseph Terteling and Ben Bland are the owners of this company.

## MAKING GOOD BRICK OUT OF GUMBO.

The Fort Pierre (S. Dak.) Brick Company is rapidly forging to the front, and the man who prophesied a few months ago that gumbo could never be utilized as building material has another guess coming. The last kiln burned varies in color from a light pink to deep, blood red, and the product is so hard that it is almost impossible to chip off a corner. The stationary kilns will be completed within a few days, and that will mean still further improvement in the output of the plant as far better results can then be obtained in the burning. The manufacturers, Harland & Kuester, are now figuring on putting down two or more artesian wells with a view to utilizing the natural gas for fuel, which will materially cheapen the cost of production.

## ACCIDENTS, DAMAGES AND LOSSES

A Lawrence, Kansas, brick works suffered a loss of over \$10,000 by the flood. The entire plant was 12 feet under water.

Arthur Douglas, watchman of the American Brick Co.'s plant near Christiana, Del., accidentally fell into the river and was drowned.

The National Pyrogranite Co., of South River, N. J., has been declared bankrupt. On application of Newark parties, a trustee will be appointed.

David Davis, engineer of the Baldrige Brick and Tile Works at Illiopolis, Ills., was instantly killed by being caught in the flywheel of the engine.

Two men employed at the Rose Brick Co.'s works at Roseton, N. J., were overturned in a boat while crossing the Hudson and were drowned.

Wendell Ellett, a boy swimming in the brick yard pond of the Mason, Mich., Brick Works was drowned. He was a son of Rev. Frank Ellett of Ilolt.

Addison Morgan an employee of the Kankakee, Ills., Tile and Brick Co., broke his leg in a runaway accident. His mule team threw him under the wagon.

W. L. Davis, New Britain, Ct., has been declared a bankrupt and his brick business turned over to Referee Kellogg. His whereabouts are not known.

John Snelzer has been appointed receiver for the Fort Wayne, Ind., Brick and Tile Co., on application of Henry Keller. The concern has \$30,000 debts it is said.

The creditors of the Alexandria Brick and Terra Cotta Co., have petitioned to have it declared bankrupt. The company is a San Francisco, California, concern.

R. E. Woods, an employee at the Hillenbrand Brick Co., at Louisville, Ky., fell into the separator and came nearly losing his life. He escaped with only one foot being crushed.

Suit has been started to appoint a receiver for the Veedersburg (2nd) Brick Co., and an accounting for Miles, Clinton B., and Walter B. Marshall. Action was brought by Homer and Herbert Howd.

Francis M. Clark asks for a receiver for the Frankfort, Ind., Brick and Construction Co. The plant has been idle for some time, and has made no money in years. Assets and Liabilities are each about \$6,000.

Philip E. Elting of Macomb, Ills., has filed a bill asking an accounting from A. D. Philpot, and the Western Stone-ware Co., of Mommouth, Ills. Mr. Elting is an attorney and one of the promoters of the company which consolidated six or eight plants.

## CONDITIONS OF TRADE IN WESTERN NEW YORK.

The demand for brick, in and about Buffalo, N. Y., and the Niagara frontier has fallen off this year about one half and as there is practically no association in Buffalo and each yard is for itself, the ruling prices are very low; and it is doubtful if any but the very best and most fortunate yards will do more than meet expenses.

**A NEW BRICK YARD FOR WEST CHESTER.**

A meeting of those interested in the new steam manufacturing brick yard for West Chester was held at the office of P. H. Corcoran and Brother, and plans practically perfected for the application for a charter and election of officers. P. H. Corcoran stated that all the capital needed had been promised. Those who will be large stockholders, besides himself, are William Corcoran, Edward Walter, John C. Ferron, West Chester, and the Smith Brick Manufacturing Company, of Philadelphia, which now operates a large plant in that city.

The only thing now to complete the new deal is agree on the price of a piece of land, 15 acres in extent, on the east side of the tracks of the P., B. & W. railroad, below the round house on the property of Edward Walter. The clay deposits on this site have been sampled and are found to be large and of a superior quality. A siding will be constructed by the railroad company to facilitate the shipment of brick to other points than West Chester.

The most modern machines and appliances for brick-making will be installed and the plant operated on a large scale.

John C. Ferron, one of the stockholders, will be the manager of the concern, as already stated. The present brick yard of West Chester is very busy and there seems to be a need for another plant. At one time several years ago West Chester had three brick yards, but all but one have discontinued the business.

Brick yards in the past century have been located at different points in the town. At one time there was a brick yard at the corner of Darlington and Bernard streets, now occupied by stores and residences.

One of the oldest brickmakers in West Chester is S. Emilen Sharples, whose father was the pioneer brickmaker of the town. Another old brickmaker was Edward H. Hall, who was at one time a partner of Mr. Sharples. Their yard site is now built upon. A. D. Sharples retired from the business several years ago. The old brick yard of John J. Parker, at Cottage Hill, has also been discontinued, after the West Chester Brick & Tile Company failed.

**MADE FROM PURE BESSEMER ORES.**

Iron oxide obtained from the ore is the principal pigment in brick, cement or mortar colors. However, in the same piece of ore there may be a dozen different grades of oxides, each of them apparently suited by appearance and texture to serve as a pigment, but only one or two of these will be chemically permanent under ordinary weather conditions. All the rest will quickly change in chemical composition and therefore in color, under the influence of light, air, heat and moisture.

Ricketson's Red Brick Brand Mortar Colors are made from the purest Lake Superior Bessemer ores from which all but the absolutely stable oxides have been eliminated by a special process. It is for this reason that Ricketson's Colors have such great strength and have shown no signs of crocking or fading in places where they have been exposed to the weather for over twenty years. Their great purity and the fineness to which they are ground makes them go farther and mix easier than the ordinary grades on the market.

**FACTS ABOUT SANITARY SEWERS**

The above is the title of a booklet which is a discussion of the comparative merits of vitrified salt glazed and concrete pipe for sewerage systems. A. Z. Bowers, C. E., of Pittsburg, Pa., is the author, and deals with the subject in such a way that one can not well get around the facts which are of course that the Vitrified Salt Glazed Clay pipes are the best.

Anyone that is doubtful before he reads what Mr. Bowers has to say will surely be with clay before they are through reading what he has to say.

**DO NOT SEE MUCH HOPE FOR CREDITORS.**

Before Referee in Bankruptcy S. E. Bertolet, a hearing was held upon the account of Edward D. Trexler, trustee of the Montello Brick Works, Reading, Pa., which was filed a short time ago.

This account shows receipts of \$73,789.89, with disbursements of \$51,759.01, leaving a balance due the estate of \$22,030.88. Mr. Trexler reports having since collected about \$2,100.

No exceptions were filed to the account, but as the trustee is ordered to pay out about \$19,500 in rentals due the Montello Brick Company on June 20, by orders of the United States District Court, the only disbursements which will be made at this time in the adjudication will be upon preferred claims and costs, the balance being needed to keep the plants in the hands of the bankrupt in good repair, pending disposition of important matters now before higher courts of review.

Mr. Trexler also presented a written report of his work since his appointment on Feb. 13 last, when the retiring receiver, A. B. Roberts, turned over to him the sum of \$33,616.21. The rents were paid in order to hold the leases for the plants by direction of a majority of creditors, requiring a disbursement of \$38,000 to the Montello Company. Sales of brick, etc., realized about \$20,000 in cash.

Mr. Trexler reports having turned into cash all the assets available, exclusive of book accounts, amounting to \$25,000, upon which 28 suits were brought in Philadelphia. Two of these, against Edward Fay for \$187.21 and J. Edelman \$262.14, have since been paid.

Prospects are blue for creditors receiving much in the way of dividends upon their claims, according to this statement made by Mr. Trexler, in closing his report:

"A number of the debtors are now in the bankruptcy courts and the prospects for securing dividends therefrom are very poor. The only hope for the creditors is to secure the approval of the U. S. District Court of the referee's order to sell the buildings as trade fixtures. If the referee is upheld and the sales take place, a fair dividend may be secured, but otherwise it will be very small."

Two contests are now pending which may affect the dividends. One is that of the trustee for the U. S. Brick bondholders, which is for the large part of the funds in the hands of trustee, and the other is the matter of selling the Oaks plant for the creditors' benefit. This plant cost \$750,000 to \$1,000,000 and the trustee expects it to bring \$100,000, if he is allowed to dispose of it.

Another asset to be sold on Saturday, June 20, is the Montello lease and right to use the Gery patents. The trustee estimates this as a good thing, but others state it will go for a song if there are any bidders at all.

### FORT DODGE SUPERIOR CLAY WORKS FILES INCORPORATION PAPERS.

Mention has been made several times of late of prospecting work being done on the Engholm property north of Fort Dodge, Ia., and it is now evident the valuable clay bed located is to be developed and will add materially to the industries of the city, articles of incorporation of the Fort Dodge Superior Clay Works being filed at the office of County Recorder Fessler.

The principal place of business of the new corporation will be in the city of Fort Dodge, Iowa, and the object of the organization will be for the purpose of manufacturing, producing, selling and distributing brick, tile, sewer pipe and other clay productions. The capital stock of the corporation will be fifty thousand dollars, one-fifth of the same to be paid at the present time and the remainder subject to the call of the directors. The stock is divided into shares of \$100 each.

Henry Engholm, Fred Reeck, Geo. Habenicht, Eli P. Casavaw and Samuel Fallon are the incorporators of the new company and under the articles of incorporation the annual meeting will be held on the second Monday in January of each year, commencing with Monday, January 11, 1909. The management of the concern shall be vested in five directors, a president, vice-president, treasurer and secretary, and until the first annual meeting in 1909, the following shall serve as the board of directors: Fred Reeck, Geo. Habenicht, Eli P. Casavaw, Samuel Fallon and Henry Engholm, and the following officers have been named:

President—Henry Engholm.

Vice-President—Eli P. Casavaw.

Treasurer—Fred Reeck.

Secretary—George Habenicht.

A most valuable bed of clay has been found as a result of the prospecting which has been carried on in the past and tests which have been made of the clay shows it is fit for sewer pipe, tile and brick, while other burnings have produced a very fine glazed ware and pottery, being almost white in color. Preparations will be carried on as rapidly as possible for the development of the new bed and in a short time the construction of the new plant will be started upon.

### McROY CLAY WORKS WILL INSTALL SEWER PIPE MACHINERY AT BRAZIL.

The McRoy clay works has closed to install machinery for the manufacture of sewer pipe. The McRoy clay plant is owned by the National Fire Proof Company, and it is claimed that this company had an understanding with the American Sewer Pipe Company, which has a plant here, that the latter company would not manufacture conduits and that the McRoy plant would not manufacture sewer pipe. Some months ago the American Company began the manufacture of conduits in one of its plants in Ohio, and this caused the National Company to install machinery for the manufacture of sewer pipe. The plant will resume operation in about a week.

### WILL SET UP KILN AND PLANT AND MAKE BRICK FOR NEW BUILDINGS.

Agricultural College, N. M., May 23.—It is expected to begin work burning the 300,000 brick that will be used in the construction of the new college buildings as soon as the bids can be opened and the contract let. It is the intention of the regents to have the brick plant set up on the college grounds and make all of the brick that are to be used in the new buildings.

This was done in the construction of the chemistry and administration buildings and it is thought that a large saving can be made by having the material burned on the ground.

### STATEN ISLAND CLAY CO.'S PLANT SOLD.

After being closed down for six and a half years the old Staten Island Terra Cotta Lumber Company at Spa Springs, on the line of the Pennsylvania railroad between Perth Amboy and Woodbridge, N. J., is about to resume operations.

The property, which is known as the Staten Island Clay Company property, consisting of 130 acres, has been purchased by a party of Philadelphia and New York capitalists. The deal has been closed and the transfer of title made.

The sale was consummated through Milton C. Quimby, of Broadway, Tottenville, who is also one of the directors and stockholders of the new concern.

The purchase price is said to be in the neighborhood of \$1,000,000.

The new concern has the backing of the Pennsylvania Steel Company, who will take the output of the new works as far as the fire brick is concerned. George Warton Pepper, of Philadelphia, the receiver of the old Staten Island Clay Company, closed out the old concern.

Mr. Quimby said that the new concern expected to begin operation in about a month.

"Thirty men will go to work at once," said Mr. Quimby, "and when the plant opens it will start with from 200 to 250 hands. The new company is incorporated with a capital of \$1,000,000. E. M. Rodrock, of Paterson, will be the superintendent and B. Frank Ellis, of New York, formerly of Tottenville, is the master mechanic.

Mr. Ellis is at the place now with some men getting the engine and boiler in shape. The outlook for the property is exceedingly bright and will be an excellent addition to the manufacturing interests of this city. The place has excellent facilities for shipping, with 1,000 feet fronting on Woodbridge creek, and a switch running in to the property from the Central on one side and the Pennsylvania railroad on the other. There are about eighteen kilns in good order and the place is rich with spa, having about twenty-eight acres of it on the place.

The contract for a new 1,000 horse power boiler has been given out and is expected to be on the grounds in a short time. This will run the machinery at the plant.

The plant of the Staten Island Clay Company has become famous through the operations of Edward Addicks, of Delaware. It has had a checkered career, but those now in control declare that its future is assured.

## CLAY RECORD.

### BRICK COMPANY TO ENLARGE PLANT.

The Black Hawk Clay Manufacturing Company, Davenport, Ia., had its annual meeting of stockholders and re-elected the same set of officers as heretofore, besides adding two new members to the board of directors. Before the election, the stockholders looked over the plant at Sears, Ill., and found it in prosperous condition. The progress made by the management was satisfactory and gratifying, and it appears that the selling department has practically outgrown the increased capacity of the plant over last year, the directors are prepared if necessary to increase the plant one-third this winter over last year's capacity. The output has been increased by about 40 per cent over last year, and shipments and sales have increased up to the present time fully 25 per cent over last year.

New contracts for No. 1 pressed brick have just been received as follows: For Duluth, on samples submitted, 80,000; for Milwaukee, 30,000; and large quantities for Appleton, Wis.; Keota High school, Keota, Ia., Janesville, Wis., and Spencer, Ia.

The officers elected are as follows:

President—M. Rothschild.

Vice-President and General Manager—C. S. Engelbrecht, Minneapolis.

Secretary and Treasurer—Ed. Berger.

Directors—M. Rothschild, C. S. Engelbrecht, Ed. Berger, George Stegner of Minneapolis, and Dr. Dueser. Mr. Stegner, who is cashier of the German-Savings bank of Minneapolis, and Dr. Dueser are the new members added to the board.

### POTTERS TO HAVE SHORT CONVENTION.

Many predictions are being made that the coming convention of the N. B. of O. P. at Atlantic City, N. J., will be the shortest in the history of the organization owing to the fact that the program of resolution only contains a total of 71 and that this year is the "off" year owing to the scale being signed until October 1, 1909.

Just how true these predictions will prove remains to be seen as many of the resolutions that appear in the program, although they do not affect wage scales, are of such vital interest to certain trades of the organization that it is anticipated that they will consume considerable of the convention's time.

There are a number of trade jurisdiction questions that are to be met and fought out to a satisfactory conclusion, and from the nature of the resolutions, to reach a satisfactory point it will require much discussion on the convention floor.

To those who remember the discussion that arose over the shop local question at the Trenton convention, all thought of an early adjournment will vanish when it is known that it is quite likely that this same proposition will be before the Atlantic City gathering. The shop local resolution consumed an entire day of the Trenton session and was finally killed by a small majority, yet many that were opposed to the resolution at that time will be present this year and unless the lapse of time has won them over to the proposition the battle will be renewed.

### AMERICAN VITRIFIED CO. AT CANEY PROMOTED BY COFFEYVILLE MEN.

The prospectus of a new brick company known as the American Vitrified Brick Company has been received showing a capitalization of \$100,000 and stock to be worth \$1 per share. The capacity of the plant is to be 100,000 brick a day. A majority of the directors and officers are Coffeyville, Kansas, men and local capital will be used almost entirely to build the plant. The company has nearly 15 acres of shale land at Caney, where the plant is to be built. Two kilns are to be constructed, and the machinery is to be thoroughly modern and up to date. Stock is now being offered at eighty-five cents a share.

The officers of the brick company are as follows: O. A. Kentner, president and general manager; G. W. Connelly, vice-president; John B. Paul, treasurer; E. N. Gause, secretary. The following directors have been chosen: E. N. Gause, Mound City; O. A. Kentner, Coffeyville; J. D. Canary, Caney; John B. Paul, Mound City; G. W. Connelly, Caney; W. E. Ziegler, Coffeyville, and J. H. Dana, Coffeyville.

### POSTON SELLS INTERESTS TO JAS. WAUGH.

James M. Waugh took charge of the Poston brick plant June 1st. Some time ago he secured an option on all the stock I. G. Poston owned in the concern. Mr. Poston has been the largest owner of the plant since it was started several years ago. Mr. Waugh takes over all Mr. Poston's stock in the plant, his residence on east Wabash avenue and assumes his old as general manager and treasurer of the brick plant. The directors ratified this exchange of the controlling interest of the stock from Mr. Poston to Mr. Waugh with the understanding that he assume the management on June 1. Mr. Waugh had his office fixtures moved to the office of the brick company at the plant. The company will continue to make five million brick, paving blocks and oriental brick per year as in the past and will have no trouble selling all that can be made. The entire product of the plant is sold as fast as made or has been since the factory started.

Some extensive improvements will be made at the shale pit, among which is a railroad bridge across Walnut fork on a spur track which connects the 21 acres of shale of the company with the Vandalia. The work on the new track will begin in two weeks. Mr. Poston will rest and travel in the northwest before he erects another brick plant.

### ROUND CORNER PAVING BRICK CUTTERS.

Automatic Side-Cutters; Round Corner Paving Brick Cutters and Anger Brick Machines are made by the Chambers Brothers Company of Philadelphia, Pa.

We recently read two testimonials given by well known firms that were exceptionally good and worth the reading by any one that is interested. If you want to know what these well known manufacturers said about this line of machinery write to the company to send you a copy of the testimonials, that's all.

### WABASH COMPANY MAKING 40,000 BLOCKS DAILY AT PLANT NEAR WEST TERRE HAUTE.

The Wabash Brick company was organized recently with a capital stock of \$75,000 and is daily making 40,000 bricks at the plant near West Terre Haute. The new organization has taken over the holdings of the C. M. Miller Manufacturing and Mining company, and will fight manufacturers of foreign brick for the Terre Haute trade.

Because of the cheapness of materials the new organization will be able to put building brick of the best quality on the market at a figure which probably cannot be equalled by any of the foreign concerns which have been flooding the local market with their products. The bricks which are being made by the Wabash company are composed largely of shale which is found in abundance in the neighborhood of the plant, which adjoins the property of the Vigo Clay company.

In the face of the small demand for their product the company is continuing operations with a force of thirty men and boys, and is investing considerable capital in the standing stock which is rapidly striding toward large dimensions.

The offices of the company are located at 672 Ohio street and the first year officers are W. H. Albrecht, Jr., president; Logan G. Hughes, vice-president; and H. M. Spang, secretary-treasurer.

### BOY DIES IN AN ELECTRICAL STORM.

Odell Young, the 14-year-old son of Mr. and Mrs. Kelly Young, of Lexington, N. C., was killed by lightning, and four other boys who were with him were injured, but it is thought that all will recover, although two of them are in a dangerous condition.

The boys were out gathering wild plums when a heavy rain storm came up and they took shelter in a building formerly used as an office of the Victor Brick Company. Formerly a telephone had been in the office and the wire remained, although the telephone had been removed. The lightning struck the wire and in this way was carried into the office where the boys were gathered. Odell Young was killed instantly. Two boys in the party were uninjured and they hurried to a nearby house and told what had happened.

Other boys in the party who were shocked were Ernest Bean, 15, son of Mr. Richard Bean; Mack Andrews, 14, son of Mr. Frank Andrews; Everett Welborn, 14, son of Mr. W. M. Welborn; and Hollis Craver, son of Mr. J. A. Craver. The last named young man is about grown up.

### P. E. ELTING DEMANDS AN ACCOUNTING FROM A. D. PHILPOT AND THE WESTERN STONEWARE COMPANY.

A bill asking an accounting from A. D. Philpot and the Western Stoneware Company, a Maine corporation, capitalized at \$1,750,000, was filed in the Circuit Court by Philip E. Elting, a lawyer, of Macomb, Ill.

Elting charges that Philpot has denied him an accounting under an agreement between them that each was to share equally in the profits of the concern. The company was organized in July, 1905, as a combination of seven different pottery companies, and a bond issue of \$500,000 was floated.

Philpot, it is asserted, caused practically the full capital stock and \$410,000 of the bonds to be issued to him.

### SAND OR LIME BRICK OR BLOCK NEWS

White and Herman, Farmersville, Ills., have commenced the manufacture of cement drain tile.

Garrett Hyatt and a number of Stony Point citizens are making cement brick at Stony Point, Cal.

The Movien Lumber Co., Lidgerwood, N. Dak., has started the manufacture of drain tile from cement.

The Wilkesbarre, Pa., Cement Brick Co., is now turning out 15,000 bricks daily. George Russell is the manager.

The schedule of the Watertown, N. Y., Sand Brick Co., shows the assets \$40,336 and the liabilities about \$1,000 less.

The Automatic Rotary Brick and Block Mfg. Co., Bay City, Mich., has been incorporated with \$10,000 capital stock.

The Fort Wayne, Ind., Pressed Brick Co., which has had many ups and downs is now in the hands of Charles McCulloch.

The Erie, Pa., Cement Brick and Block Co., has been incorporated with \$20,000 capital stock by Harry Weinheimer and others.

The Jonesboro, Ark., Sand, Cement and Brick Co., notified the state that it had dissolved and desired to surrender the charter.

The plant of the Texas Pressed Brick Co., at Wortham, Texas, has been sold to J. Wattinger and C. A. Lanius of Abilene for \$25,000.

The prospects for the Saginaw Sandstone Brick Co., at Saginaw, Mich., are very bright, the report for the year just past was very good.

According to the final account of the Lawrence Sand Lime Brick Co., New Castle, Pa., the amount to be paid to the creditors is only \$1,192.

The court has approved of the sale of the Indianapolis, Ind., Composite Brick Co.'s plant to William G. Beatty for \$9,700. Same will be sold to a new company just organizing.

The Sheffield, Ia., Cement, Tile and Block Co., have completed their organization. C. F. Johnson is president, L. S. Sullivan, secretary and manager, and G. A. Johnson, treasurer.

The Janesville, Wis., Cement Post Co., have made several large shipments of cement posts to William Jennings Bryan and the Granite Brick Co., of the same place, have orders ahead for a long run.

The Dunkirk, N. Y., Brick and Supply Co., has been incorporated with \$25,000 capital stock. Incorporators are W. L. Markham of Buffalo, C. E. Whelpston, S. M. Hamilton, T. J. Cummings and C. S. Putnam of Dunkirk.

The Compressed Flint Brick Co., Webb City, Mo., has been incorporated with \$150,000 capital stock. It will assume control of and enlarge the plant there. A. M. Wagner, Frank S. Hamilton and J. W. Frey are the directors.

The Composite Brick Co., Indianapolis, Ind., has been incorporated with \$25,000 capital stock. The directors are Henry P. Wilcox, Henry Mooz, Aaron O. Hill, William G. Beatty and James G. Madison. They will take over the Indianapolis Composite Brick Co.'s plant.

The stockholders of the Washington, D. C., Asphalt Brick and Lime Co., elected the following directors to serve for the year, N. H. Shea, W. A. H. Church, R. H. Johnson, Dr. R. T. Holden, Dr. Hazen, Dr. Ober, J. F. Oyster, E. N. Gray, T. V. Smith, J. John Lynch, C. A. Stockett, M. McCormick, H. W. Taylor, P. Molney and D. G. Stewart.

## MISCELLANEOUS ITEMS

James L. Daugherty, formerly of Streator, Ills., contemplates the building of a sewer pipe plant at Oklahoma City, Okla.

The Crothersville (Ind.) Brick & Tile Co. has been incorporated. Directors are J. G. Ritz, Louis Donahue and W. P. Rider.

The Progressive League of Orange, Texas, is after a brick works for that place and are having the clays tested with that object in view.

The Engineers' Club of Philadelphia, Pa., has moved from 1122 Girard St., to 1317 Spruce Street, H. G. Berling, secretary.

The Alvin, Texas, Brick Co., will be the name of the Company to operate the kaolin brick plant being established by E. B. Hill and others.

The Cook County Brick Manufacturers Association has been organized at Chicago. Incorporators are Thomas Carey, B. F. Weber and Joseph Bock.

The St. Maries (Idaho) Brick Co. has been incorporated with \$50,000 capital stock. Incorporators are John E. Landeryou, William M. Mooney and John A. Peine.

France & Wynn of Blue Ball, Pa., have bought the Old Sandy Ridge Fire Brick Works at Sandy Ridge, Pa., and will improve and operate it to its fullest capacity.

The Kansas City (Mo.) Vitrified Brick Co. has been incorporated with \$125,000 capital stock. Frank J. Shinnick is president. The company will operate a plant at 33rd and Genesee Streets.

The Clay Products Mfg. Co., East Liverpool, O., has purchased 160 acres of kaolin in Aikin Co., N. C., and will establish a plant for the manufacture of vitrified and ornamental brick, sewerpipe, terra cotta and ornamental china.

The Fort Wayne (Ind.) Brick & Tile Co. have contracted for a complete new outfit of machinery and the Nickel Plate Ry. will build a switch into their yard. Geo. A. Jaap is president, J. E. K. France, secretary, and Gottlieb Haller, treasurer.

Mrs. J. M. Dunn has succeeded her father as manager of the Dunn Brick Works at Erie, Pa. She is a woman of excellent judgment and proposes to continue the manufacture and sale of brick upon the same plan as that of the deceased father.

George W. Howland has resigned as secretary of the North Iowa Brick and Tile Co., at Mason City, Iowa, and will be identified with the Farmers' Co-Operative Brick and Tile Co., as its general manager. The plant is to be built by Johnson and Nelson of Red Wing, Minn.

The "Martin" Improved and Modern Style "P" Disintegrator has been placed in operation on the plant of Messrs. Bross & Shearer, Shippenburg, Pennsylvania, who have also installed a "Martin" Improved Pug Mill, Sander, etc., installed by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania.

The St. Johns Brick Company, St. Johns, Quebec have just installed the "Martin" latest improved 1908 model, style "A" steam power brick machine in combination with the "Martin" improved and modern style "P" disintegrator, sander, etc., the above furnished by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania.

The Washington, Ia., Brick and Tile Works are working full force and shipping out tile daily.

The Rocky River Brick Co., Cleveland, O., has been incorporated with \$40,000 capital stock, R. C. Huffman, R. E. Barnett, J. Hoollock and Paul S. Knight.

Dumont, Ia., business men have organized a commercial club, for the purpose of getting a brick and tile plant and other industries to locate there. C. R. Martin is secretary.

The Drake Brick and Clay Co., Roodhouse, Ills., has been incorporated with \$50,000 capital stock to manufacture brick and other products from clay. Incorporators are A. V. Houghton, George Baldwin and J. E. House.

The Ottunwa, Ia., Brick and Construction Co.'s case has come up before the Interstate Commerce Commission, and it is more than likely that the company will be given a uniform switching charge so that the company can operate the plant as heretofore.

The plant of the West Bay City, Mich., Brick Co., on Stone Island has started up with a full crew and has orders ahead for 2,000,000 brick. McCatchey and Jacobs are the proprietors. The machinery has been overhauled and kilns put in good condition.

The Brick Yard of the Doukhobor Society at Verigin, Saskatchewan, Canada, who equipped their plant with a complete "Martin" outfit of Brick Machinery about a year ago are now installing a duplicate "Martin" outfit on their Benito, Manitoba yard, including the "Martin" 1908 model Brick Machine, etc., etc., which was furnished by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania.

## DIRECT HEAT

## DRYERS

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W. D. Gamble of Redland, Cal., is arranging to install a brick making plant at Coachella, Cal.

Senator W. L. Clayton will rebuild his brick plant at Greeley, Colo., which recently burned to the ground.

The Black Hawk Clay Mfg. Co., Sears, Ills., has increased the number of directors, its capital stock and the capacity of its plant.

The Middleport, O., Brick Co., has been incorporated with \$15,000 capital stock, by J. B. Downing, Wm. A. Stephens, Ben Hysell, and Henry Kelso, Jr.

Contracts have been let for the erection of a brick making plant at Hanover and Lake Streets, Milwaukee, Wis., by M. Mollister. The structure will cost \$100,000.

The D'Harris, Texas, Brick and Tile Co., have been adding new machinery to its plant and among other things are adding a large dry pan, so as to more thoroughly grind the clay.

W. W. Lewis has sold his interests in the Williamsburg, Va., Brick and Tile works, and the plant is now owned by Arthur Lewis, and S. S. Cillingsood, and will be operated full force.

Meredith and Cronniger, Hartford City, Ind., will manufacture brick as well as tile so as to supply the home market with this product instead of its having to be shipped in.

The Auburn, Ia., Brick and Tile Co., have their plant in operation, the shale being hauled by teams from the pit until the electric road is finished. The farmers are waiting for the tile.

The Amarillo, Texas, Brick and Tile Co., has been incorporated with \$25,000 capital stock. Incorporators are R. T. Stringfellow, M. C. Lemaster, Terry Thompson and H. H. Cooper.

George Burrows of Warren, O., is the active manager of the brick and tile works at Forrest, O., which is to be incorporated with \$60,000 capital stock and make sewer pipe exclusively.

The Union Brick and Tile Co., Los Angeles, Cal., is sinking a well at Santa Monica near 26th Street, preparatory to the installation of the new brick yard that will employ seventy-five men.

The machinery for the Mitchell, S. Dak., Brick and Tile Co., which was supplied by the C. W. Raymond Co., of Dayton, O., is now being installed so that the company can be making brick within a month or so.

D. O. Loy who owns the Wataga, Ills., Brick Works has made arrangements to remove same to Shiffeld, Ills., and erect there a modern brick and tile plant. The erection of buildings, kilns, etc., has already been started, and it is expected the new plant will be in operation by the first of September.

The Speeceville Brick Manufacturing Company, Speeceville, Pennsylvania, are in the midst of the construction of their new brick plant which includes the "Martin" Machines, etc., the "Martin" Improved Patented Rack Pipe Steam Brick Dryer System for making and drying over 33,000 brick daily, the Henry Martin Brick Machine Manufacturing Company, Pennsylvania, installing the same.

The American Pipe Co., has declared its quarterly dividend of 2 per cent payable July 1st.

Peter and Frank Gates may open a new brick yard up the Mishicot River, from Two Rivers, Wis.

G. H. Ingram and J. D. Fay are organizing a \$2,500 company to make brick at Brownwood, Texas.

An expert brick manufacturer has been engaged to operate the Mayo Brick and Tile Co.'s plant at Walhalla, N. Dak.

Neil Campbell, Albert Cahoon, and Ed. Thomas will burn brick at Middle Point on Muldoon Road near Bellevue, Idaho.

The Anacostia Brick Co., Station H, Washington, D. C., elected the following officers, J. T. Heare, George Swift, W. J. Zeh, and H. A. Beck.

J. F. Slater formerly of the Grinnell, Ia., Brick and Tile Co., has located in Gilman, where he has purchased and will operate the brick and tile plant.

James M. Waugh has secured the I. G. Poston stock in the Poston Brick Co., at Crawfordsville, Ind., and is now the general manager and treasurer of the company.

Frank Gery of Reading, Pa., is now at Catskill, N. Y., in charge of the Catskill Shale Brick Co.'s plant which has been leased by a new company controlled by the Gerys.

The Rawson, O., Tile Co., is now burning its first kiln of tile. The plant has a complete system of steam heat for operating the year around, and make tile from 3 to 18 inch.

The Farmers' Co-Operative Brick and Tile Co., has been incorporated in Augusta, Maine, with \$2,200,000 capital stock. President is L. A. Ingalls and treasurer, E. J. Pike, Augusta.

The Rapid City, S. Dak., Brick and Tile Co., have received their new dry press brick machine and same is now being installed. Guy Marshall is the superintendent and Samuel Price is the manager.

Mr. Wm. F. Stimmel, Kutztown, Pennsylvania, has just completed his new plant which includes the "Martin" Improved Patented Rack Pipe Steam Brick Dryer System for handling over 33,000 brick daily.

Mr. W. W. Phifer, Charlotte, North Carolina, is just about completing the installation on his plant of the "Martin" Improved Rack Pipe Steam Brick Dryer System of 20,000 daily capacity Stiff Mud Brick.

The Brookdale Brick and Tile Co., Brookdale, Manitoba, has been incorporated with \$40,000 capital stock. Incorporators are Robert D. Hales, Wm. E. Hales, Henry C. Smith, Robert Dodds, Clayton H. Cameron.

The Hot Springs, Ark., Clay Products Co., has been incorporated with \$1,000,000 capital stock, \$800,000 being subscribed. Lee Worthington is president, C. L. Shattuck vice president, Edward H. Johnson, secretary and J. B. Henderson, treasurer.

The Bull Run Talc and Soapstone Co., Fairfax, Va., has been incorporated with \$10,000 capital stock. The officers are, president, H. J. Reagan of Chester, Pa.; vice president, A. H. Harrington of Philadelphia, and secretary-treasurer, B. H. Reagan of Chester, Pa.







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## ADVANTAGES OF COAL OVER WOOD FOR BURNING BRICK IN UP-DRAFT KILNS\*

BY J. D. PRATT, MENOMONIE, WIS.

In my estimation, coal is as far superior to wood for burning brick as an automobile is to a wheelbarrow for locomotion and transportation. The burning with wood is both uncertain and expensive. The difficulties consist largely in the inability to control the heat which is often unavoidably too high or too low, because it is impossible to get as even heat with wood as with coal, for the reason that one arch will be fired with dry wood, one with semi-dry and one with a mixture of both. Thus we have three arches fired with three different grades of wood, and you will find about that average in every brickyard. What is the result? The arch that was fired with dry wood will receive the proper amount heat, while in the other two, the wood will lie there and sizzle, and you will have to dig around in the wood pile for some dry sticks to help them along, and you will have one hot arch and two that are not. By the time you get them up to the proper heat, the other one has cooled down; the ends being exposed to the cold draft will crack and check, rendering them of little value. With coal we have no such trouble. After the watersmoke is clear you commence firing with coal with the same amount in each arch. It is all the same kind of coal in each arch and will give the same amount of heat in each arch, and if your kiln is in good condition, it is easy to keep an even heat throughout the entire kiln.

If you are firing with three or four shovelfuls of coal to each arch, every twenty minutes or half hour you get the same kind of a fire in every arch in the kiln and the result will be an even burn. Brickyards as a rule do not get the best wood, even though they pay the price. The slogan is "Anything is good enough for the brick yard," and a great deal of it is rough and crooked and when it comes to getting it in the furnace it is like trying to get a No. 9 foot into a No. 5 shoe. The fireman will keep the door open, twisting, turning, and pushing, until he gets it inside

the arch, if he has to knock down the furnace front to do it, which he generally does. Then, looking in through the peep-hole, he finds the arch black, which is sure to crack and chip the brick and while the burner is building a dog-house in front of the damaged arch, he will remark, "Got you in there anyway, b' gosh." If using the running rod the stick of wood will balk on the quarter by sticking its nose in the bottom or against the sides of the arch, then comes another contortionist act accompanied with a flow of vocabulary peculiar to the brick yard, but it sticks just the same and is left there to burn out of the way. By the time the other arches are ready for another fire, the result is another black arch and only half-fired. You have all been spectators or actors in this scene. With coal everything moves along serenely, no getting stuck in the arch with coal; no keeping furnace doors open but a few seconds. You can control your fires with ease, they can be regulated with a half shovelful of coal or more. It requires more labor with wood than with coal and is harder work. Now, I do not know much about heat units and there are a lot of us that would not know a heat unit from a microbe, if we met them coming down the street together, but we do know what fuel gives the most heat for the money. Simply speaking, one ton of bituminous or soft coal equals two cords of hard maple wood, such as we are in the habit of using, or one cord of good body maple wood, bone dry, equals 1,157 lb. of coal. One cord of white pine dry body wood equals 740 lb. of the same kind of coal, but wood standing out in the ranks in the woodyard will get moist and will run down much lower, but moisture does not effect coal in that way. In fact we wet our coal to give it heating strength. Thus you see, coal loses none of its strength by moisture or wet weather, while it is almost impossible to keep up the proper maximum of heat with wet wood.

There are 15,162,000 more heat units in one ton bituminous coal than there are in one cord of hard maple wood. With wood at \$3.50 per cord and coal at \$3.50 per ton, we get two-thirds more heat from coal for the same money. Brick burned with coal have a dark color that can not be

\* Read at the last meeting of the Wisconsin Clay Manufacturers Association.

## CLAY RECORD.

obtained by burning with wood. Brick burned with wood will be fire marked and flashed more than with coal. Last summer we ran short of coal at one time, when we had a kiln almost free from watersmoke and by telegraphing to the coal company were informed that it was on the road, but for some unknown cause was delayed. We had plenty of wood, so concluded to heat up and fire with wood until the coal arrived. Well, the coal failed to arrive. The words of that immortal poet, Geo. Peck, about the darkness disappearing before the dawn would compare with dawn, it was two dump-carts and three or four more that the way those wood piles disappeared, but instead of the caused the disappearance. When some one asked what had become of all the wood, I told them it went where the quarter-pound of Adams Standard went, "up in smoke."

We finished the kilns with wood, however, and as we were closing up the last arches, the train pushed three large carloads of coal in front of the kiln. The smell of sulphur around there for a few minutes was not caused by coal gas. Thus we had two kilns side by side, one burned with wood, one with coal. There was about as much difference between the two as there is between a red apple and a lemon. The wood handed us the lemon. It was hard enough, but the color was lacking. Taking the standard samples of the grades, No. 5 shade was about all we could get, where we usually get 6 and 7 in the kilns burned with coal.

In using coal, there is a great loss caused by improper firing. Only enough coal should be thrown in at each firing to make a light coating all over the grate surface. The thickness of burning coal on the grates should not exceed four inches and the grates should be kept to show a bright light in the ash-pit at all times. The firing should be light and often and the ash-pit should be kept clear of hot coals and ashes and thus save the grates and coal, and there should be plenty of room in the combustion chamber. Heavy firing makes imperfect combustion, as too much coal thrown into the fire-box smothers the fire.

We know that the oxygen necessary to supply combustion is derived from the atmosphere. The hydrogen that is in the fuel has a greater affinity for the oxygen of the air than the carbonic gas has and if the furnace or arch has not a sufficient supply of air the hydrogen will take up the oxygen and leave the carbonic gas to pass into the kiln unburned. Settling upon the brick when they become hot enough, it partially burns into an ash and discolors the brick and you will sometimes find gray brick and a light-colored dust in the kiln. It is a mistaken idea that the gas in coal can be consumed by getting it hot enough. It will not burn until air gets to it, therefore we have an air flue along the side of the furnace connecting with the combustion chamber, whereby we can admit enough heated air to form an almost perfect combustion, thus saving a large amount of coal that otherwise would go up in smoke. It takes no scientific training to find this out. We remember in burning the old scove kiln with wood, that sometimes an arch, on the side which had the doors clauded shut, would not burn, the wood would just lie there and char until we went around and cracked the door and gave it air.

It would then quickly start to burn, or if we found one the wood was burning out faster than the others, we would soon be daubing mud around the door to close the crack. We know one was getting too much air and the other not enough.

I guess I am wandering from fuel to burning, so I will get back to my subject. It would be almost impossible to burn our yearly product of brick with wood now. It would require annually over 3000 cords, and piled 4 ft. high and 4 ft. wide would reach about 4 miles in length.

Some clays require more fuel to burn them than others. A clay which requires one-quarter of a ton of coal per M. brick will require one-half cord of wood per M. brick. You will find this about right at the price of \$3.50 per ton for coal and \$3.50 per cord for wood. It would cost 87½ cents per M. to burn with coal and \$1.75 per M. to burn with wood. On this basis we can burn 2000 brick with a cord of wood, or can burn 4000 with a ton of coal for the same cost. Mixed wood at \$2.00 per cord is more expensive for burning brick than coal at \$3.50 per ton, both in handling and as a fuel. Some say coal will not throw as long flame as wood, but it will, and a dark heavy flame with some strength, while the wood flame is light and easily killed with a draft. There is as much difference in the strength and color of a coal and wood fire as there is between a glass of water and a glass of that which made Milwaukee famous.

It was obvious that the assemblage was greatly interested in the reading of this paper, and at its conclusion responded with prolonged applause.

Prof. E. R. Buckley, Rollo, Mo.: I think the information contained in this paper which has just been read by our secretary is one which opens a field for investigation. I would like to ask if the members of this association know whether the freight rates on coal are equalized in this state, equalized in comparison with the rates obtained in other states? I would simply like to ask as a matter of inquiry whether the association has any knowledge on the rates on coal? Can anyone give me any information on the subject? Do you know of any rates outside of Milwaukee? How do those rates compare with the rates that are obtained by the Chicago producers or producers outside of Wisconsin? I want to know whether they are also getting the advantage of a lower rate in the freighting of their coal as they are in the freighting of their brick? You can readily see that the Chicago brick manufacturer has a double advantage over the Wisconsin producer if he receives a reduction in both cases. Now, I don't know that our Railroad Committee can do anything to improve the rates on fuel into Wisconsin, whether it is possible in any way to lessen the rates on fuel. That is a case of lowering rates and not raising them for the producers in Illinois. The fuel proposition seems to be one of the most serious ones that confronts the brick manufacturers in Wisconsin, and I simply want to offer the suggestion that perhaps it may be well for the brick manufacturers of Wisconsin to be familiar with the rates which are being charged, and I also wish to say that it would be not at all out of place for the Wisconsin brick manufacturers to have some knowledge of the fuel value, the heat value of the different coals shipped into the state. Coal is

not coal any more than wood is wood. It is said in the paper which has just been read, that the man who ships cord wood to a brick plant will ship any kind of wood—any kind of wood is good enough for a brick manufacturer. I know that the same practice prevails with coal. I know that sometimes the fellow who ships it in thinks that any kind of coal is good enough for brick manufacture. I think there are two lines in respect to the use of coal as fuel which may be taken up and be investigated through the agency of this association. One is the character of the coal which is being shipped into the state and another is the rate charged for the shipment of coal to the consumers, the brick manufacturers of Wisconsin. I have just had brought to my notice not more than six weeks ago a case where one of the very largest consumers in our state in the mining industry—a company which consumes perhaps in the neighborhood of from three to five cars of coal a day—which have been obliged to even send a specialist to the coal fields of Illinois and into the mines of Illinois to investigate the character of the coal and find out where they could get coals with the largest and best heating value. And when it comes to a point of reducing the cost of fuel to the manufacturer of brick, I think these two items are worthy of careful consideration by our association. (Applause).

G. W. Kennedy, Manitowoc: I think Mr. Buckley's point is well taken. There is a man present here, Mr. Fricke, who is well known as a brick burner in Wisconsin, and I think he could give us some information on the subject, if he would, as to the different kinds of coal.

Ed. Fricke, Manitowoc: We burned a kiln last fall where we generally use the Youghiougheny gas coal for burning and got the best results out of it. I got another carload of coal that was Hocking coal. When you get the Youghiougheny you cannot tell the difference between them by their appearance, but in the burning quality you can tell the difference. And so I have found that Youghiougheny gas coal was the best coal for our purposes, the one we got the best results out of in burning the brick. I don't know whether any of you people ever burned the Hocking and the Youghiougheny, or different coals. I have had all kinds of experience with coal. It all looks black to me when we get it and you cannot tell the quality until you burn the coal, and it is my experience that Youghiougheny gas coal is the best, at least I have found it so. In our kilns we have permanent walls. They answer the same purpose as a dog-house. Our walls are from 36 to 26 in. thick.

L. T. Crabtree, Cranston: Do your arches extend clear through the kiln you have?

Mr. Fricke: No, we only burn our coal on grates in furnaces. But I have heard Mr. Kennedy, who was over in Michigan, say that he saw some parties burn without grates, and he can probably tell you more about that than I can.

Mr. Crabtree: I would like to ask if any member has had experience in burning coke, for instance in kilns?

Mr. Fricke: I have used coke in our kilns.

Mr. Crabtree: How does it work?

Mr. Ed. Fricke: It works good, where you have your fire, it does not damage the arch brick.

Mr. Crabtree: Does it flame as readily as wood in that position?

Mr. Fricke: No, if you get the right kind of coke it will not flash.

President Hilker: Is there anybody else? I think Mr. Gunther has been using coal in his scove kilns; perhaps he can give you some information.

Sam'l Gunther, Port Washington: We have been burning coal about three or four years. We have had very good success with it so far and we just use scove kilns. You have got to take out below for your drafts to get your grates in, and get them cleaned, but we do first rate. The main thing is the quality of your coal. Now we use what you call the "Basalt Black;" but there is also a different grade in that coal. We had an awfully poor coal in one kiln, and before we used a carload of Youghiougheny, as this gentleman was telling before, but still we didn't have enough to finish up that kiln, and I presume the Youghiougheny coal is better than the Hocking. Of course, if you get the genuine, taken from the lower vein, it is all right, but still, you cannot always get it.

L. T. Crabtree: In the scove kilns you speak of grates. What size are they?

Mr. Gunther: We have 4-ft. grates.

Mr. Crabtree: How far do they extend? Clear across?

Mr. Gunther: From the outside of the wall they stick in about 3 ft. into the arch. Now in the beginning we start off with wood, just a little kindling, and then we use the Solvay coke for drying.

Mr. Crabtree: You use the wood only for water-smoking?

Mr. Gunther: Yes, and when the kiln is good and dry we start in with coal. Of course, you have got to have it good and dry, otherwise you get too much black soot in there and you cannot fire through. Now, we had an awful trouble with the soot up at the top, and then we got an old shot gun and a few plain shells and we fired that off in there, and you ought to see the dust come out after that. That is the best remedy we have found for taking the soot out.

President Hilker: If there is nobody else who wishes to speak upon this subject, we will take up the next paper: "Clay Products of Wisconsin, as compared with those of adjoining States," by Prof. Samuel Weidman, State Geologist, of Madison, Wis.

## BRICK MAKING AT TOPPENISH

The first kiln of brick ever burned in Toppenish, Wash., was opened May 19th, and proved to be of superior quality. Another big kiln is almost ready to burn, and yet there is a demand for more than the two yards can make the ensuing season, such is the building boom in Toppenish. As it is now assured that the reservation here will open before time to put in crops for another season, everybody is hustling here to buy property and build, realizing that Toppenish has only commenced to grow, although now a town of fully 1,500 people, but a mere hamlet ten months ago.

The Washburn (Wis.) Brick Company has served notice of dissolution.

## SOME PROBLEMS IN TRANSMISSION

BY W. S. STAFFORD.

The subject of power transmission is a very broad one and cannot be discussed with any degree of thoroughness in a short article. It is certain that all clayworkers realize and appreciate the enormous leakage and loss of power in their transmission systems, and this constant and expensive drain is surely deserving of more attention than it usually gets.

Shaft and belt transmission is, of course, the only means at hand under most conditions, but a great deal of loss in systems of this kind could be avoided by more attention to lubrication, more care in alignment of shafts and bearings and better care of belts. Belt surfaces are often destroyed by the too frequent use of belt dressings containing resin and other sticky substances. Use neatsfoot when necessary.

It has been estimated by unquestioned authorities that the loss of power in shafting transmission is from forty to sixty per cent. of the indicated horse power of the engine. This includes in addition to losses in transmission apparatus, the internal friction of engine. The percentage increases very rapidly as the load falls below normal from the fact that the transmission friction remains practically constant under varying loads. As an example: If the full load is 150 horse power, the power necessary to drive transmission would be about 75 horse power. If the load on machines decreased so that 125 horse power was only necessary, the friction load would remain at about 75 horse power or 60 per cent instead of 50 per cent. These figures will also apply to rope transmission, and a comparison of this system with belting will show very little difference in efficiency. An extended comparison of these two systems would be useless at this time, plant conditions being the one deciding factor. Long and complicated drives are, of course, increased in efficiency by rope installations, but for short and medium centers and straight drives, a good, well kept belt is undoubtedly superior.

The kind of belting to use is sometimes a problem calling for careful consideration. Atmospheric and other conditions should decide this question. For brick yard practice a high grade stitched canvas belt seems to give good satisfaction, possibly on account of construction. It is undoubtedly better suited for any plant where moist atmospheric conditions and constant exposure prevails, than either rubber or leather belting.

On account of the many advantages of electrical transmission, including individual drives for all machines, eliminating shafting and belting, and increasing flexibility and economy, this method of transmission is at all times to be preferred. It has not yet come into general use, especially among clayworkers, although it is surprising how many new plants, now in process of construction, are installing electrical transmission systems. Under some conditions it is advisable, to even contract for central station service, provided a low rate can be obtained and a long term contract. However, if you have the means, install your own plant, operate it properly; take care of it and you will find it more satisfactory than depending upon others. One of the largest concerns in the State of Michigan recently decided to install their own plant, even after they had been offered power by an electric light and power company for one cent per kilowatt hour. This was an exceedingly low figure, we must admit, and the decision not to accept it was only made after a month of thorough investigation. Central station service is desirable at times, but they are not going to sell you power

at cost, and with similar apparatus, you can produce current as cheap, or nearly so, as they can. Should you buy your power, you will still find it necessary to buy all necessary motors, transformers, etc., in addition to cost of wiring. This, of course, is your property, but it certainly is of no value unless current is available when wanted.

For general manufacturing purposes, the induction motor of 440 volt type is usually the most satisfactory for average conditions, although costing more than other classes. In clayworking plants this type is especially advantageous, as each machine usually requires a heavy overload in starting or when operating on extra stiff clay. This type of motor will stand momentary overloads of 150 to 250 per cent.

While the merit of alternating current for power has been fully demonstrated, it is always best when figuring on the character of the apparatus to install, to consult some one fully qualified to decide this matter after studying yard conditions. Your apparatus should be standard in any case and manufactured by a standard company. Repairs will cost less than if your outfit were semi-standard and its standard make is sufficient guarantee of its reliability and efficiency.

As a rule the larger electric manufacturing concerns employ men as traveling representatives who are competent in every way to advise prospective purchasers of apparatus suited to their purpose. A thorough digest of the opinions of two or three of these men will leave no room in your mind as to the best kind of apparatus to install. Your prime mover and steam plant must be rugged and well designed to stand the varying loads, not only from an economical standpoint, but also in speed regulation.

A good, up-to-date and economical steam plant with the prime mover direct connected to a generator, and every machine in your plant driven individually by an electric motor is unquestionably the most modern and by all odds the most efficient and economical method of power transmission for manufacturing purposes.

By far the most modern, efficient and satisfactory electrical installation is a "direct connected unit," which means having the armature of dynamo fixed on engine shaft. The first cost of outfits of this kind are necessarily more expensive than a belted unit on account of slower speed of generator, but its many advantages justify the greater expenditure. For small units up to 150 K. W. an automatic engine is to be preferred, but above that size a slow speed Corliss engine will usually give better results.

In any case, close regulation is absolutely necessary in any engine operating electrical apparatus, as the slightest change in speed will cause a varying voltage and consequent flickering of the lights.

The speed regulation guarantees of most builders of high grade engines are practically the same, and under normal conditions are nearly fulfilled. Not enough attention, however, is paid to the proper weight and size of fly wheel, which is an auxiliary governing apparatus. In a direct connected unit this should always be heavier than standard and of different proportions.

On account of high rotative speed of a small direct connected unit, the engine should be particularly strong and well designed, but as light as possible, consistent with strength, in order to reduce vibration to a minimum. Bearings should be extra large and special provision made for lubrication. A central oiling system is always to be preferred, all oil cups being fed from one central tank and being filled by gravity.

Electrically driven manufacturing plants can always compute from switchboard instruments the exact power being used, and usually a recording ammeter is installed and all records kept. In that way comparative statements of costs are more easily compiled at the end of the year.

## REPORT ON THE CEMENT INDUSTRY NOW READY

"The cement industry in the United States in 1907," by Mr. Edwin C. Eckel, published by the United States Geological Survey as an advance chapter from "Mineral Resources of the United States, Calendar Year 1907," is now ready for distribution.

A summary of the facts relative to the total cement production of the United States in 1907 was given to the press on April 6, 1908, and the paper just issued contains the details of the statistics upon which that summary, reproduced in the accompanying table, was based.

*Total production of cement in the United States in 1906 and 1907, by classes.*

Class.	1906.		1907.	
	Quantity (barrels).	Value.	Quantity (barrels).	Value.
Portland . . .	46,463,424	\$52,466,186	48,785,390	\$53,992,551
Natural . . . .	4,055,797	2,423,170	2,877,700	1,467,302
Puzzolan . . .	481,224	412,921	557,252	443,098

Total . . . \$1,000,445 \$55,302,277 52,230,342 \$55,993,851

The figures given show an increase in 1907 of 2.4 per cent in quantity and 1.1 per cent in value, the smallest recorded in recent years.

The State figures given by Mr. Eckel show little change in the rank of the great producers in the last two years. Portland cement was produced by 94 plants in 21 States, natural cement by 52 plants in 14 States, and puzzolan, or slag cement, by 10 plants in 8 States.

In the Portland cement branch of the industry, Pennsylvania, with a production of 20,303,965 barrels, valued at \$10,698,006, is still the leading State by a large margin. New Jersey, with an output of 4,440,896 barrels, worth \$4,738,516, is second; Indiana, with a production of 3,782,841 barrels, valued at \$4,757,866, is third; Michigan is fourth, with an output of 3,572,608 barrels, valued at \$4,384,731; and Kansas fifth, with an output of 3,353,925 barrels, valued at \$4,240,358. These five States contributed almost three-fourths of the total production, and none of the remaining States produced as much as 3,000,000 barrels during the year. The concentration of Portland cement plants in the so-called Lehigh district of Pennsylvania, with its New Jersey extension, continues. Here 21 plants made over 24,400,000 barrels, or slightly more than half the Portland cement produced in the United States in 1907.

A discussion of Portland cement and the materials consumed in its manufacture was published by the Survey in Bulletin 243, but the demand for this was so great that the edition was soon exhausted, and the new and revised edition, now in preparation, will not be ready for some time. In answer to numerous requests for the information that bulletin will contain Mr. Eckel has included with his statistical report a brief summary of the more important facts relative to the raw materials. The geographic distribution of cement materials in the United States is also briefly discussed.

In view of the oft-repeated statement that the output of Portland cement in the United States is still far behind the

possible demand for the product, Mr. Eckel's estimate of the maximum annual capacity of the cement plants, based on statistics of kilns and kiln practice, is most interesting. The number of kilns in operation in 1907 was 876, and 87 new kilns will be ready some time in 1908. "This gives a total of 963 kilns that can be used if the cement trade becomes prosperous enough to justify it. As all of the new kilns are 100 feet or more in length, and as many of the old kilns are being lengthened, it seems entirely safe to estimate that the average possible output per kiln per year is now considerably over 60,000 barrels. Assuming for convenience that this average is now 62,000 barrels per kiln, it will be possible to make Portland cement during the latter part of 1908 at the rate of 5,000,000 barrels per month, or 60,000,000 barrels per year. In view of the existing financial conditions, however, it would appear probable that the cement production of 1908 will not exceed that of 1907."

## SUPPLY OF BAUXITE AND ITS USES

The consulting engineer of this city reports that in 1907 the world's production of aluminum was 25,000 tons, requiring for the manufacture thereof 120,000 tons of red bauxite: the manufacture of aluminous and refractory products consumed 180,000 tons of other bauxite; the total production of this mineral, therefore, was 300,000 tons in 1907. Since a year ago the exploitation of French bauxites has developed considerably, this being due to the fact of the creation of a number of new factories, in which use is made of processes, the patents for which have expired. Rich deposits of the mineral have been found in different localities, until now unexplored, and the newly organized companies have eagerly taken up concessions, some of which may or may never be actually exploited. In the opinion of the Marseille consulting engineer the French bauxite deposits are inexhaustible. Almost every day new pockets are brought to light, which are not utilized. After the exhaustion of deposits of bauxites yielding from 60 to 65 per cent of aluminum, the aluminum industry will have in reserve deposits yielding bauxites containing 45 to 47 per cent of aluminum, these latter deposits being practically inexhaustible.

The refractory products manufactured from white bauxites containing from 40 to 45 per cent of aluminum are much sought in this country for use in industries where exceedingly high temperatures are maintained. Cupolas, locomotive fire-box linings, and glass furnaces are manufactured of bauxite bricks, which give special satisfaction. These products are sold at high prices. Practically the total production of white bauxite from the department of Var is shipped to manufacturers of refractory products in Belgium.

The most expensive quality of bauxite is the white ore, which yields 60 per cent of aluminum, 4 per cent at most of iron, and which is without silica. This ore is utilized in the manufacture of chemicals, and is worth from \$3.57 to \$3.86 per ton. Next in value comes the red bauxite, containing 60 per cent of aluminum and 3 per cent of silica, which is converted into aluminum, and is worth \$2.31 to \$2.89 per ton. Third in order comes a special white bauxite for the manufacture of refractory products, containing 45 per cent of aluminum, traces of iron, and much silica. These are the broad descriptions of the three standard grades shipped by French producers. [A list of the principal producers of bauxite in France, and the name of a dealer in Marseille, who is in touch with the numerous producers, are on file in the Bureau of Manufacturers.]

# **SPECIFICATIONS ON LIME FOR USE IN SAND-LIME BRICK MANUFACTURE\***

By H. O. Duerr.

As the magnitude of the sand-lime brick industry, and its relation to your industry, may not have been brought to your attention, I feel that it is not out of place for me to show you how vitally you are interested in the success of the sand-lime brick industry, and how essential we feel it is to our interest that you realize the necessities of our industry in so far as we are affected by lime and its proper preparation.

The sand-brick enterprise is approximately seven years old; the first plant was put in operation in 1901 in this country. Since that time about 135 plants have been built, of which 115 are now in operation. There is invested approximately \$10,000,000 in capital.

These plants have a capacity of 700,000,000 bricks per year. To make these 700,000,000 bricks requires not less than 100,000 tons of lime, or 2,500,000 bushels—the output of 36 kilns. I am sure this means something to you, gentlemen, and especially as the industry is still very much in its infancy.

No sand-lime brick plant can be a success unless it is able to purchase a good quality of lime. Sand-lime bricks are made by mixing approximately six per cent. (6%) of caustic lime with ninety-four per cent. (94%) of sand. This mixture is pressed into brick, placed in a hardening cylinder, and steamed for a period of ten to fifteen hours. This steaming action produces a chemical reaction between the calcium oxide in the lime and the silica in the sand.

It has been clearly demonstrated that the strength of the bricks depends entirely upon the amount of the cementing material produced by the action of the calcium oxide upon the silica of the sand. There is no reaction between any of the other ingredients. On the contrary, whatever impurities the lime may contain are deleterious. Therefore, whatever we buy in the shape of lime that is not calcium oxide we are paying for without any return; in other words, we are being hurt by reason of its existence.

I do not mean to say that we cannot use a lime that contains magnesia, or that contains silica or other impurities, but I do mean to say that we are paying for something that we do not want.

In addition to this, the presence of these impurities, such as magnesia, makes the preparation of this infinitely harder and more expensive for us.

There are other conditions which are also injurious to our industry—conditions over which we have absolutely no control, which we cannot remedy, but which you can, and that is, improperly burned lime—lime which has been overburned or lime which has been underburned.

When you overburn your lime you make it difficult for us to slake it. It takes longer; requires more time to properly slake it. When you underburn your lime, you are giving us a large percentage of what is called "core"—what I would call "limestone." Limestone is not only of no use to us, but it retards the proper slaking of that portion of the stone

which is burned. You are not giving us honest results, because you are selling us lime and giving us limestone.

There is still another condition. That is lime which has been burned in improperly constructed kilns. Some years ago we received a carload of lime from a plant which had supplied us with lime for more than a year. It had been extremely satisfactory; had worked well; but when we undertook to use this car of lime we found, first, that we had great difficulty in slaking it; second, when the cylinders were opened we found, instead of brick, the worst mess that it is possible for you to imagine. There was not a whole brick in that cylinder. We knew that such troubles were encountered by an improperly hydrated lime containing magnesia, but we also knew that the quarry from which this lime came had a very small percentage of magnesia in its rock.

We immediately had the lime analyzed and found, although apparently properly burned, that it contained 28 per cent. of calcium carbonate. About the same time I read a report given by Mr. Miller, the Canadian geologist, stating that he had found that when limestone was burned in a so-called pot kiln, where there was insufficient draft to carry off the carbonic acid gas, the lime at a dull red heat would re-take the carbonic gas and become limestone again. Upon investigating the lime from its source, we found that the carload that had been shipped us, instead of being the lime which we had been accustomed to getting, having been burned in the so-called patent kiln, was lime that had been burned in an old-fashioned pot kiln, and that Mr. Miller's statement was correct.

This experience cost our company more than \$500. You, gentlemen, cannot afford to have such experiences happen to us, for we are too good and large a customer for you to lose.

I am glad to say that the lime industry has made great progress in this country in the past decade, not alone in its magnitude but also in its method of production, but I want to assure you that the successful limeburner of the future will be the man who knows the analysis of his rock, who takes the same care in selecting it and burning it and placing it on the market as the cement manufacturer does today.

It will be absolutely necessary for our own protection to buy lime, not by the ton as you may see fit to send it out, but by the per cent. of its causticity. By the per cent. of causticity I mean the absolute amount of calcium oxide or quicklime present, no allowance being made for the lime which is combined as hydrate or carbonate. This calcium oxide is the only element in lime which is valuable to us, and the sand-lime brick men will be compelled to purchase their lime under the same specifications as high calcium lime when sold to chemical industry, and those of you who will be in a position to furnish lime under those conditions will be the ones who can command the market for our business. A few cents extra cost per ton means nothing to us as compared with the absolute guaranty and assurance that the material which we are buying is what we require.

The lime industry, like a great many others, has been handed down to us from generation to generation, and you have been satisfied to accept the methods and judgment of your forefathers, but, gentlemen, we have reached an age in

\* Address to the National Lime Manufacturers Association at its Chicago Convention, 1908.

which old methods will not be accepted, and it behooves you to get in line and to adapt such methods as will enable you not alone to hold our trade, but to get the trade of your less active and alert competitor.

There is just one way in which to do this: that is, place yourselves in a position not only to inaugurate all the economies possible in your business, but to produce a material which is the best possible that can be produced.

From my knowledge of the progress made in lineburning and results that some of the burners have obtained, I am satisfied that you can get the highest efficiency and best results from your stone in a modern equipped plant at less cost than you are now obtaining in the old-fashioned way.

This, of course, necessitates a larger capital investment on your part, but you will be surprised at the results and will find that you will soon get this additional investment back in additional dividends and business.

In the last few years I have come intimately in contact with leading engineers and architects in the country who are interested in building and building materials, and I am led to appreciate the fact that they are becoming more *stringent* in their requirements and more intelligent in their knowledge of what is good and what is bad, so that I am satisfied that it will not be long before it will be a question of not what is the price of your lime, but what is the quality of your lime.

At \$5 per ton, every 1,000 brick requires approximately 75 cents' worth of lime; for every 1 per cent. of lime used it means 12½ cents per 1,000 brick. We find that since we get but 80 per cent. value from the lime we are receiving because of the impurities in that lime, we could make an equally good brick with one-fifth less lime if that lime were pure. Consequently, if we were assured an absolutely pure lime, we could afford to pay you \$6 per ton for that lime and still be money in pocket. The actual cost of the lime per thousand bricks would be no greater to us, and the saving in troubles caused in the plant over the use of impure lime is more than I can take the time to enumerate here.

Think of the man's peace of mind who comes to his plant each morning knowing that when the cylinder is opened he is going to have a perfect batch of brick, as compared with the mind of the man who goes to his plant each morning with fear and trembling, not knowing what to expect.

The sand-lime brick industry has had more difficulties to overcome, not alone in the plants but in dealing with the public, by reason of the conditions of the lime which they use, than in all the other items put together.

I have given you the figures of the condition of the sand-lime brick industry at the present time. All new industries have a stage of relapse. That has been the case in the sand-lime brick industry in the last year or two, but the tone at the present time is one of recovery, and the outlook is exceedingly bright for a rapid increase in this industry.

In my conversation with the various manufacturers of sand-lime brick I find that they have a very hopeful tone, and that the prospects for the next few years are exceedingly bright for the establishing of many more plants.

It will not be long before in many sections of the country where clay is scarce or of poor quality the chief building material will be sand-lime brick, and I look for an increase

which will make in the next ten years the sand-lime brick industry one of the largest industries in the building material trade of this country, and instead of your selling two and one-half million bushels of lime annually, you will sell many times this amount.

Such was the result in Germany. There are many sections there today where the sand-lime brick predominates, one plant alone near Berlin turning out annually 75,000,000 brick, requiring 300,000 bushels of lime.

The progress in plants was very slow in the first few years in Germany; today there are over 400 plants, most of them having been built in the last five years.

We surely have a right to expect that this large country will do much more than has been done in Germany.

In conclusion, let me reiterate, gentlemen, you cannot afford to let us suffer any longer than it will take you to go home and make such changes in your organization and plant as will overcome these difficulties.

### MONTELLO BRICK LEASES OFFERED FOR SALE

The leases for the plants of the Montello Brick Works, Reading, Pa., as well as the licenses for use of the A. A. Gery patents for making brick for these plants, as well as in the district, were offered for sale.

H. F. Kantner, counsel for the trustee, E. D. Trexler, ordered to sell both for the benefit of creditors, and H. L. Boas, for the Montello Brick Company, gave notice that the original company claims right to use these patents at the Oaks plant.

The Gery patents were first put up.

H. L. Boas said he gives to cents. No other offers were made, although Mr. Davis had asked \$50,000 and Mr. Kantner said they cost the company over half a million dollars, and had no desire for penny bids.

The Montello lease was next offered, and Mr. Boas gave notice that the buyer could not secure possession except with the consent of the Montello Company, and that the buyer must be satisfactory and also assume an annual rental of \$75,000. The lease covers all the Montello plants and runs over 900 years.

The sale of the lease was then started at \$25 and run up to \$150 by Mr. Boas.

The patents were taken up at 25 cents and the lease again offered with a provision it meets the approval of the referee and the retention of the Oaks plant, including the steam shovels, etc.; all pending a decision of a contest in court.

Mr. Trexler said the buyer can have all the plants under the lease.

The patents were then bid up to \$1, when Mr. Kantner said: "We will not sell at that price."

The lease was again offered and rose from \$150 to \$200 and sold subject to the confirmation of the court, to Hugh Fitzpatrick, of Philadelphia.

Mr. Trexler said he would not recommend the confirmation of the sale of the lease, as it was up to the court.

The license on patents were afterwards sold to Geo. S. Stirl for \$25, under the same conditions.



## SUBSTITUTES FOR WOOD ARE SOUGHT

What are houses going to be made of when there is no more timber? That is a question which, in these days of disappearing forests, cannot be dismissed as academic. There is no better proof of the reality of the destruction of the forests, of which so much has been heard recently, than the outlay necessary for even a simple frame dwelling. In the short period of ten years the cost of a home has increased from 30 to 60 per cent., according to whether it is near a source of lumber supply or in a thickly settled section far away from the woods.

Government experts have covered the country with their investigations, and they report that the time is not far off when the country's timber will be gone. This means that other things must be found to take the place of wood. The United States government has established laboratories at various centers, for the purpose of testing all sorts of structural materials. The results of these tests are published from time to time, and in this way engineers, architects and contractors are informed as to the capabilities of the materials.

Only within the last year or two has general interest in the diminishing timber supply been aroused. The recent conferences of governors, called by President Roosevelt, was due chiefly to the report of the official forester, Gifford Pinchot, to the president. To the condition which made the conference necessary may be traced, also, the invention of novel building materials. One example of this is Thomas A. Edison's unique idea of making huge moulds and pouring concrete into them, "houses made while you wait," but nobody has yet been bold enough to put this idea into practice. Then there are other forms of concrete and cement which have been proposed, all more or less in the experimental stage at present.

Thus there is a constant attempt to employ for building the only substance of which the supply is unlimited, the soil of the earth itself. Especially is this so in and near the big cities, where the scarcity of timber and the consequent high prices are felt most seriously. For here the difference in price between a frame house and a house of more solid material is so small as to be unimportant. Illustrative of the general tendency to find substitutes for wood is the suggestion of Herbert M. Wilson, of the United States Geological Survey, that scientific investigations into the properties of clay be undertaken. The American Ceramic Society made a start in this direction, by appointing a special committee to report upon a plan for systematizing the study of clay products.

Individual builders, meanwhile, have gone ahead and demonstrated the practicability of their ideas. Last year the building department of New York City, for the first time in its history, received plans for a terra cotta house. The plans were passed upon favorably; and the house, which belongs to a professor in New York University, has just been completed. In the suburbs around New York there have been put up, recently, several terra cotta dwellings. The principal element in them is the hollow tile block—the same kind of block that is used for fireproofing the skyscrapers on Manhattan Island. It is manufactured from New Jersey clay,

and in the process of manufacture is subjected to a heat of 2,200 degrees.

In the walls and partitions the blocks are set end on end, so that the hollow spaces form continuous perpendicular pipes. These hollow spaces make the walls non-conductors of heat, and thus tend to keep the house warm in winter and cool in summer. In the floors the blocks are laid between beams of steel or reinforced concrete. With both walls and floors made of terra cotta, each room is enclosed with fireproof material, and fire could not easily spread from one room to another.

The second man who submitted to the New York building department plans for a terra cotta house was Amos L. Schaeffer, engineer of the public service commission. Instead of letting the job to a contractor Mr. Schaeffer employed laborers and himself oversaw the construction of the walls and floors. By this he saved money, the frame costing him only \$2,500. Once the frame of hollow blocks is built, the cost of a house depends mostly upon the "frills," the interior finish, trimmings, decoration, etc.

The exterior surface of a house of this type is covered with a stucco of whatever color the owner chooses. When the work is all done there is no way of telling what is under the stucco, whether wood or brick or tile.

The original cost of a terra cotta house is perhaps to percent greater than that of a frame building of similar size. The ultimate saving is effected through smaller maintenance charges and insurance premiums.

Some architects have made a specialty of fireproof dwelling houses, planning homes that cost anywhere from \$5,000 to \$40,000. Only last year two handsome terra cotta residences were built at Englewood and Mount Kisco, suburbs of New York, at a cost of about \$40,000 each. At almost the same time a terra cotta cottage, with nine rooms, was put up at Briarcliff, another suburb, for \$6,500. Since the introduction of automobiles the safe storage of large quantities of gasoline has become a problem for the builder. Wood is of no value here. In the big cities the law requires the building where gasoline is kept to have none but fireproof materials in them. Accordingly, many of them are being made of clay products throughout. An instance is the tile garage built recently by Dave Hennen Morris, former president of the Automobile Association of America. Other owners of private and public garages have followed his example.

Perhaps the most significant single effort toward the substitution of other materials for wood is the proposal to extend the fire limits of New York to include the whole greater city. If the aldermen pass such an ordinance, it will mean that no more frame houses of any kind may be built in the metropolis. Ten years ago this plan would have had no chance of success; now it has a good chance, simply because the high price of lumber has made the cost of a fireproof house relatively small, and has therefore removed or weakened the desire of builders to use wood.

Mr. George C. Doyas, a gentleman from Egypt, who has been visiting the States for some months past, is taking back with him to Egypt an outfit of "Martin" Stiff Mud Machinery from the manufacturing plant of the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania.

**CONDITION OF BUSINESS ON PACIFIC COAST**

Now that the money market on the Coast has improved so materially and crop conditions are so very favorable that the immediate prosperity of this territory is assured, building operations are being resumed and plans are made for a busy fall season. In San Francisco building is, of course, not going on as rapidly as it was at this time last year, for conditions then were abnormal and the demand for office buildings in the downtown section of the city has to a great extent been filled. Although to the casual observer who views the number of structures upon which work has been suspended it may seem that there is but little being done, there is, according to those in a position to know, about the same amount of building now being done here as there was before the great fire and conditions then were considered to be in a very prosperous shape. Many of the frame structures in the downtown district which were erected immediately after the fire are now being removed and plans drawn for substantial buildings. While there are but few contracts being let at the present time brick men are kept busy figuring on a great many and as soon as general conditions are a little more satisfactory there is expected to be a heavy demand for brick for immediate delivery. While some firms have closed their plants during the present dull season, most of the manufacturers have run on full time and expect to be able to take advantage of the turn in the market a little later on.

The demand for pressed and fancy brick is much better than that for the common kind from the fact that work on the large steel frame office and store buildings which use the bulk of this class of material is going ahead in much better shape than on the structures designed for commercial and manufacturing use. Prices for face brick are being well maintained and with but a limited supply on hand it is not likely that there will be any changes in this respect. The large stocks of common brick at the yards and the necessity of many of the smaller firms for having immediate cash to meet their obligations have resulted in quite a slump in prices and there is no general rate being adhered to on this article.

The recent bubonic plague scare in San Francisco has aroused the entire coast to the need of better sanitary conditions and a great many of the smaller cities have recently voted bond issues for the work of installing up-to-date sewer systems. As a result the demands for tile have increased quite heavily and the country business has become a more important feature of trade in this line than ever before.

M. A. Murphy, manager of the Carnegie Brick & Pottery Co., has recently returned from a visit to eastern points and expresses himself as being very well satisfied with conditions on the coast as compared with those in the place he visited. His firm has been doing a good business all through the spring months and still has a number of large contracts to fill. He reports an increased call for glazed brick and states that the plant is working on full time on this article with but a light stock on hand.

The United Materials Company of 10 Third street, San Francisco, has just received the contract for furnishing the face brick for the new building of the Union League Club.

A cream colored brick made by the Stockton Brick Company will be used.

The Great Western Brick Company has decided to take advantage of the lull in the demand for building material and is giving its plant a thorough overhauling. Work will commence again in the fall when the demand is expected to be heavier and prices more remunerative.

The Carquinez Brick Company, which holds a large contract for furnishing brick for the new Palace Hotel, is now making deliveries for use on this structure. It also has some very good contracts in Oakland and its plant is being operated to its full capacity.

The city council of Alameda is receiving bids for the furnishing and laying of a large amount of sewer pipe in that city and local firms are busy making estimates.

The Hyfire Brick Company, with works near Vallejo, Cal., will commence operations again about July first. Manager A. Abramson states that the output will be limited for some time, as improvements to the extent of \$50,000 will be installed.

The California Pressed Brick Company, which was formed some time ago for the purpose of erecting a brick plant at Niles, Cal., has succeeded in floating its first issue of bonds to the extent of \$25,000 and will soon order the necessary machinery.

The Pacific Clay Company, which operates a brick plant at Corona, Cal., contemplates making some very extensive improvements in its equipment soon. An excellent bed of clay has been opened on a hill a short distance from the plant and a tramway will be installed to carry this material to the crushers. J. R. Conrad, the manager of this concern, states that the plant at Newark is being enlarged and that when it is finished the daily capacity will be 100,000 bricks. Six kilns and a large dryer are now almost completed and a fine quality of fire and paving brick will be produced.

A sewer system to cost between \$50,000 and \$75,000 is planned for Tulare, Cal., and the trustees of that place will soon be ready to consider bids.

Vallejo, Cal., is to make some improvements and additions in its sewer system at an estimated cost of \$35,000.

Bonds to the extent of \$50,000 are now being sold to defray the expenses of the sewer extensions and improvements planned for the city of Reno, Nev.

A new brick, tile and pottery plant is being projected for Indio, Cal., by capitalists of that place and Los Angeles, who have secured control of a tract of 640 acres of fine clay. J. E. Bood and Phil. Ross, of Indio, are the leading promoters.

**ANNOUNCEMENT OF CONSOLIDATION**

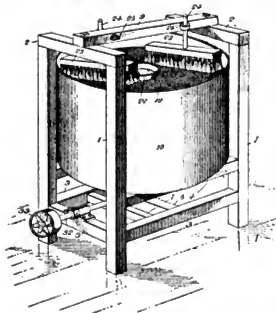
The Deekman-Duty Brick Company announces the consolidation of the Malvern Clay Company, Malvern, O., with the Collinwood-Deekman-Duty Company. The name of the new company is the Deekman-Duty Brick Company, with general offices at 854-858 Rose building, Cleveland, O. The officers of the new company are: Spencer M. Doty, president; Chas. J. Deekman, vice-president, secretary and manager of sales; Herbert C. Moatz, treasurer.

## CLAY RECORD.

## NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

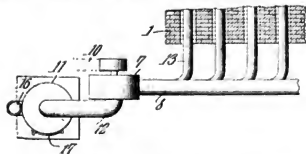
These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

886,666. Rotary Screen. Daniel P. Findley, Mineral City, Ohio. Filed May 14, 1907. Serial No. 373,597.



A machine of the character described, comprising a supporting framework, a casing mounted in said framework, a vertically extending shaft mounted to rotate in said casing, a spider carried by said shaft, an open bottom drum secured to the ends of the spider arms, the casing being provided with a bed in the lower end of the drum, the bed being formed with a discharge opening and the casing exterior of the bed being formed with a discharge opening, one discharge opening being distinct from the other, a sifting head comprising a screen and a frame to which the screen is attached, the frame fitting within and supported removably on the upper end of the drum, brushes supported in the framework and adapted to engage with the screen of said sifting head, and blades carried by said drum, as and for the purpose set forth.

887,204. Means for Drying Green Bricks. Andrew J. Warner, West Durham, N. C. Filed Aug. 15, 1907.

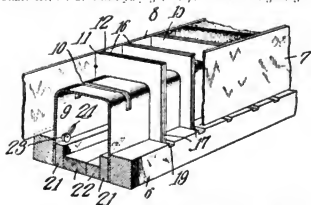


A means for drying green bricks in a kiln, preparatory to burning the same, comprising a source of heat, perforated conduits insertible into the fire chambers of the kiln and a blower interposed between the source of heat and the perforated conduits for directing a heated fluid into the kiln and against the green bricks therein.

A means for drying green bricks in a kiln, preparatory

to burning the same, comprising a means for collecting the heat generated in a kiln where the process of burning is progressing, a truck, a blower mounted thereon, a knock-down connection between the blower and the means for collecting the heat from the fired kiln, means on the truck for propelling the blower, a conduit leading from the blower, and other, perforated conduits insertible into the fire chambers of another kiln where the green bricks are stacked preparatory to burning.

887,398. Brick and Block Mold. Charles W. Jones, Charlotte, N. C., assignor to American Roofing Tile Co., Charlotte, N. C. Filed July 30, 1907. Serial No. 386,236.



A mold including longitudinally disposed sills, side walls supported by the sills, a core member interposed between the side walls and removable from the bottom of the mold, said core member being provided with spaced transverse slots, division plates seated in said slots and bearing against the side walls, and means for locking the core member in operative position.

890,586. Brick-Handling Machine. William H. Francis, Cherryvale, and Charles Francis, Independence, Kans.

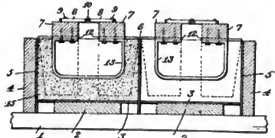
A machine for handling bricks, comprising a vertically disposed frame, laterally extended arms carried by the lower end of said frame, expandible clamp plates arranged beneath each laterally extended arm, means for expanding said clamp plates, and means for operating the same by the initial movement of the lifting strain.



A machine for handling bricks, comprising a vertical frame, with laterally projecting lifting arms, clamping plates at their lower ends, said plates being made of two expandable members, a wedge shaped thrust bar arranged to be projected between said said expanding members, a horizontal shaft having loose hubs with crank pins connected to said thrust bars, and lifting devices arranged to rotate said loose hubs.

887,432. Mold for Building-Blocks. Frank M. Sawyer, Charlotte, N. C. Filed July 26, 1907. Serial No. 385,719.

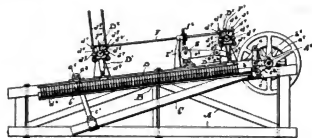
In a mold for building blocks, a core piece, and a common means for supporting and positioning same projected part way into the mold and for contracting the same to withdraw it from the formed block.



In a mold for building blocks, a series of open sided core pieces, means for removably supporting the same within the mold, and a series of spacing plates intermediate said core pieces and supported by the core piece supporting means and removable therewith.

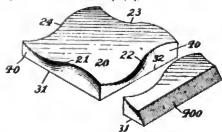
887,436. Clay-Screen. Herbert H. Smith, Elsinore, Cal. Filed Feb. 2, 1907. Serial No. 355,418.

The combination of a screen, an elongated brush disposed lengthwise of said screen, bars transversely disposed above said screen, arms longitudinally movable along said bars and oscillatory about the same, the ends of said arms being connected with said brush, and means adapted to oscillate said arms irrespective of their position longitudinally of said bars.



The combination of a screen, an elongated brush disposed lengthwise of said screen, bars transversely disposed above said screen, arms longitudinally movable along said bars and oscillatory about the same, the ends of said arms being connected with said brush, means adapted to move said arms back and forth along said bars, and means adapted to oscillate said arms irrespective of their position longitudinally of said bars.

888,530. Tile. John H. Pugh, New York, N. Y. Filed Jan. 23, 1906. Serial No. 207,415.



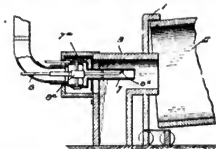
A tile having a butt wall formed of a warped surface which is inclined inwardly along part of its length and outwardly along another part of its length.

A tile having a butt wall formed of a continuous warped surface with overlapping and underlapping faces, one of which has its surface inclined inwardly and the other in-

clined outwardly, one edge of said wall being curvilinear and the other of dissimilar shape.

888,573. Kiln. Mois H. Avram, New York, N. Y., assignor to Avram-Leet Engineering Company, New York, N. Y., a Corporation of New York. Filed July 19, 1907. Serial No. 348,518.

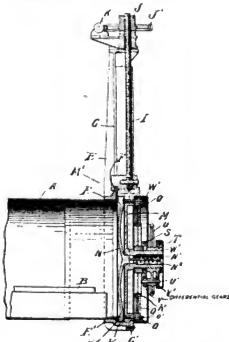
In a kiln, the combination of a receiving chamber, a yoke adjacent to the mouth thereof, a frame carried thereby and held from movement longitudinal to the chamber, a cover carried by the frame and located between the frame and the mouth, means for forcing the cover away from the frame and toward the mouth, said means consisting of set screws



carried by the frame and engaging the periphery of said cover, means for moving the frame together with the cover in a direction at an angle to the axis of the chamber, and toothed sectors carried by said set screws and a common gear carried by said frame, and with which said sectors mesh.

887,318. Rotary Kiln. Carleton Ellis, White Plains, N. Y. Filed Oct. 31, 1905. Serial No. 285,265.

The combination with a horizontal inclined kiln, of a source of heating gas and a gas burner therefor comprising a gas port arranged to direct gas into said kiln and having within it low pressure and high pressure air passages arranged one within the other.



The combination with a horizontal inclined kiln, of a source of heating gas and a gas burner therefor comprising a gas port arranged to direct gas into said kiln and having within it low pressure and high pressure air passages arranged one within the other, and means for heating both the low pressure and the high pressure air.

## CLAY RECORD.

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GEORGE H. HARTWELL, EDITOR

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Vol. XXXII.

JUNE 30, 1908.

No. 12

"I like to read American advertisements. They are in  
themselves literature, and I can gauge the prosperity of the  
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the  
very time that advertising should be the heaviest. Ninety-nine  
out of every hundred merchants advertise most when there is  
least need of it, instead of looking upon advertising as the pan-  
acea for their business ills.—John Wanamaker.

Mix brains with your enthusiasm.

Blunt language is often used in making sharp retorts.

So many queer things now happen every day that people  
have lost faith in miracles.

Be a man whose word is worth a hundred cents on a dollar  
and your reputation will be as good as gold.

The average man tries to console himself with the belief  
that he isn't half as big a fool as he used to be.

Don't brood over the past or dream of the future; but  
seize the instant and get your lesson from the hour.

These are the times to extend your advertising, watch  
other expenses, but "go long" on good printers' ink. The  
ones that are getting the business are the ones that are doing  
this.

Have you sent in your subscription? If not, it certainly  
is due by this time. Do not be one of the slow ones. Send  
it in at once. Your money will be returned to you by the  
asking, if you are not satisfied with the paper. Remember  
the Clay Record is the only clay journal in America that is  
published twice a month.

A GOOD PORTION OF YARDS ALONG RIVER  
MAY SHUT DOWN

That a good portion of the brick yards along the Hudson  
river may shut down before long is the belief of many peo-  
ple, including a number of the manufacturers. Building in  
New York City is very slow and the makers have difficulty  
in disposing of their product except at cost and under.

Brick are selling for \$4.50 a thousand in New York and of  
this amount \$1.25 is paid out for shipping to the city. When  
everything is considered there is no profit at this price. Mil-  
lions of brick are stored in the sheds along the river and will  
not be loaded on barges unless the price improves.

Last fall the slump in the brick market began and there  
has been no rise in the price, but instead a constant dropping.  
The panic caught many builders with their money tied up in  
defunct banks and there was little to encourage building.  
Here was a time when the manufacturers had lots of brick  
on hand and they should have been getting some of the  
money back from that paid out in labor last summer. But  
the market did not recover in the spring.

Many manufacturers this spring decided not to mould too  
many brick this summer in order to keep down the supply  
and some worked only a third of their machines and others  
a half. It was necessary to either curtail expenses or shut  
down entirely, but nearly every yard started up under some  
headway. At several yards no colored help was brought  
from the South in order to give preference to local men and  
wages were kept down below former years. This seemed to  
be working smoothly.

The Staples yard at Port Ewen, working four machines,  
have closed down after a season of one month. Fifty-five  
men were laid off and only a few retained in order to burn  
what brick was on hand. At Stockport, where they have  
twenty machines, it was said that this had been reduced to  
eight, which would continue until the end of the season.

A Kingston manufacturer said that the outlook for a full  
season was bad enough. He said he would not be surprised  
if the yards closed down by the first of August, if not sooner.  
For himself he would continue to October 1 if there was any  
improvement in the market. Even at that the season's work  
would be thousands of dollars on the wrong side of the  
ledger, but the manufacturers would still have their product  
on hand if business opened up better next year. This manu-  
facturer was optimistic, however, and looks for easier money  
as soon as the presidential nominations are completed.

## INADEQUATE BUILDING LAWS

(From the Washington Star)

Concrete construction has been in vogue for several  
years. There is a building in this city composed wholly of  
concrete, and reinforced concrete is locally used in many  
ways as supplementary to the ordinary masonry work.  
Failures of concrete construction have been reported from  
other cities in a manner to direct attention pointedly to the  
fact that this mode of construction must be subjected to a  
rigid inspection. The Washington regulations should long  
ago have been made sufficiently stringent on this subject to  
insure at least reasonably safe concrete construction. If it  
is true that the local regulations in force at this time do not  
insufficiently cover concrete construction, the building in-  
spection service has been decidedly negligent in keeping  
progress with the constantly developing art of building.

## OBITUARY

Colonel C. S. Barrett, 66 years old, of New York and Cleveland, Ohio, a millionaire brick manufacturer, dropped dead of heart disease in his rooms in the Hollenden Hotel. His family home is in White River Junction, Vt.

John James Campbell, a well known business man and former burgess of Wilkinsburg, Pa., died at his home on Swissvale avenue at Wilkinsburg, where he had resided for 22 years. He was identified with the Enterprise Brick & Stone Co. at Edgewood and interested in real estate in Swissvale.

Edwin Bennett, 90 years old, president and founder of the Edwin Bennett Pottery Company, one of the pioneer potters of this country died at his home 2510 St. Paul St., Baltimore, Md. Death was due to heart failure which was caused by a recent fall. Until three weeks ago he was actively engaged in his immense business, and was at the works every day having general supervision of same, and in touch with all the details.

## BRICK BUSINESS GOOD AT BLOOMINGTON

The brick manufacturers of Bloomington, Ill., report that the outlook for a good business in their line this summer is very promising and that in all probability the consumption of their product this year will be up to the average, if not above. Last year was rather a poor year for the sale of brick, but all indications point to a greatly increased demand in Bloomington this summer. From the start things have taken already, there will likely be much more activity in all building, and especially brick, than formerly. The Bloomington Pressed Brick Company intend to start up about the first of July. They have about 2,000,000 brick on hand at present, with a good market for them. Riley & Heafer are running every day, but have been much hampered by the weather conditions. Among the larger brick contracts which are about to be begun are the Christian Science church, the Kirkpatrick building, the addition to St. Joseph's hospital and the new school building at Normal University. The brick for the last named building will be supplied by the Western Brick Company of Danville.

PAVEMENT ON WOODWARD AVENUE  
DAMAGED BY STEAM PIPES

You do not have to go to Trinidad to find an asphalt lake. At Woodward and Willis avenues, Detroit, Mich., where the steam pipes of the Central Heating Co. cross the street, there is a puddle of half molten asphalt right in the middle of the street and even the lightest foot leaves its mark in the mushy mass. A manhole covered with an iron lid is everlastingly so hot as to be available for cooking "flap jacks" and the steady banner of steam that leaks out is a timely warning against hotter things below.

It is so hot in winter that no snow ever covers the spot and rain drops are turned to steam as fast as they strike. Since early spring the asphalt all about has been getting softer and softer, and is rolled and dented and rolled again by every passing wheel.

## FIRES, ACCIDENTS, DAMAGES AND LOSSES

Burke Brick Co., Ft. Smith, Ark., has been obliged to shut down their plant on account of the high water.

The Montello Brick Works, Reading, Pa., has secured a judgment against the Mt. Gretna Brick Co. for \$99,766.

The office of the Hatch Brick Co., 128 No. 3rd St., Salt Lake City, Utah, was robbed and unsigned checks taken numbering from \$190 to \$194.

The workmen of the Mohawk Valley Brick Supply Co., Utica, N. Y., went on a strike for higher wages. Their demands will not be granted.

Miss Charlotte Webster, of Montreal, Quebec, has had Charles H. Shaw, son of the president of the Zanesville (O.) Tile Co., arrested and jailed for failure to marry her.

The Philadelphia Clay Co. has applied for an injunction against the York (Pa.) Clay & Mfg. Co., restraining the latter from erecting a double track line across their property.

Addison Thompson, receiver for the Fairfield Pot & Clay Company, has filed a petition asking for a receiver for the National Glass Co. of Pittsburg, Pa. Wm. M. Bell was appointed.

Floods destroyed 400,000 brick for F. G. Pannenberg & Co., brick manufacturers, in their yard in LeHullier, just outside of Mankato, Minn.; also lost 500 cords of wood, which floated away.

Lee W. Servey has begun suit against the Sandstone Brick Co., Schenectady, N. Y., to recover \$15,000 for the death of his son, who was torn to pulp by the explosion of a cylinder a year ago.

The plant of the Latonia (Ky.) Brick Company was visited by a fire which caused a loss of \$20,000. No insurance. The officers of the company are Julius Herrick, president, and F. S. Perry, general superintendent.

State factory inspectors are after Hudson river brick manufacturers for violating the factory law regarding employing children, and arrested William Delaney, of Glasco, N. Y., for employing a 13-year-old boy at the yards of the Empire Brick Company.

E. N. Hopewell has been appointed receiver for the Anacostia Brick Co., Washington, D. C. He will operate same.

Fire broke out in the plant of F. H. Vander Hayden, Ionia, Mich., and partly destroyed his plant, causing a \$5,000 loss. Insurance only \$2,500.

HIGHEST GRADES OF FULLERS EARTH IN  
TEXAS

The state of Texas had a number of tests made in comparison with standard grades of 100 power English fuller's earth for bleaching Cotton Oils, at College Station, Texas, in May, 1908. It showed that the highest grades came from O'Quinn, Texas and went as high as 207 and 224 bleaching powers.

The deposits are on the S. A. & A. P. R. R., over 16 feet thick in places, overlaying a heavy bed of lignite coal.

No attempts were ever made to put it on the market, because it was thought to be simply a nice clean clay.

There is a great opportunity for capitalists to invest. Address the Postmaster at O'Quinn, Texas.

**BRICKMAKERS IN ANNUAL SESSION**

The third annual convention of the Brickmakers' Association of Arkansas met June 23 at the Hotel Marion in Little Rock. After attending to the business in hand Fort Smith was chosen as the place for the next convention and the following officers were elected: President, M. C. Burke, Fort Smith; first vice-president, R. B. Frizzell, Monroe, La.; second vice-president, C. B. Yauch, Pine Bluff; secretary-treasurer, C. E. Taylor, Little Rock. The executive committee for the term expiring June, 1900, was appointed as follows: T. T. Cotnam, Little Rock; W. W. Dickinson, Little Rock; A. Brewster, Pine Bluff; for term expiring June, 1910, O. S. Sutton, Marianna; C. W. Clark, Little Rock; N. P. Neal, Hope.

Among the questions discussed at the meeting was a proposed change in the lien law of Arkansas as it affects the material dealer, and the question of following up bad debts and the prevention of selling to irresponsible contractors.

The retiring president, A. Brewster, of Pine Bluff, has been in the brickmaking business for twenty-four years. In his address to the association he stated that it would seem that in that period one would gain a thorough knowledge of the business, but that he never met with a lot of brickmakers but what he gained some new ideas.

In the course of his address he said:

"I hope the time may soon come when every brickmaker in Arkansas will meet with us and join with this association. Each one of us frequently has some experiences in the business which if told to others would enable us to avoid heavy losses. The courts are constantly making new rulings about the lien law, and as we are busy making bricks and selling them we sometimes overlook new rulings.

"By meeting and talking together we would soon learn who the irresponsible contractors are who go about from place to place picking up odd jobs of building."

Among those who attended the meeting were: A. Brewster, Garland Brewster, John O'Neal, Pine Bluff; C. W. Clark, W. W. Dickinson, C. E. Taylor, Mord Roberts, Little Rock; R. B. Frizzell, Monroe, La.; J. H. Thalman, Malvern; N. P. O'Neal, D. H. Lipscomb, Hope; O. C. Sutton, Marianna; D. J. Young, Fort Smith; A. C. Brown, Hot Springs; C. H. Wesselle, Stuttgart; M. C. Burke, Fort Smith; J. N. Kauffman, Hot Springs; T. N. Atkinson, Perla.

**MITCHELL BRICK PLANT OPENS**

Mitchell, S. D., June 26.—This morning the Mitchell Brick and Tile Company started its plant for the manufacture of brick. The company has invested \$20,000 in the plant, and the clay that is used for the brick has been tested, showing a fine quality of soil. The capacity of the plant is 35,000 per day, and which can be increased by the addition of more tunnels in the dry kilns. The company has put in good machinery throughout and it is driven by electric power. Its first order is for 300,000 brick for the electric light and gas plant of the Mitchell Power Company, which is to be rebuilt on a new site.

Mr. J. J. Halkock of East Stroudsburg, Pennsylvania, has just installed on his yard an outfit of "Martin" Stiff Mud Machinery.

**BRICK WANTED FOR PAVEMENTS AT ROCKFORD**

Brick paving is gaining steadily at Rockford, Ill., in the votes sent to the city engineer. One of the largest of the South Main street holdings was voted in favor of brick.

Secretary Joslin of the local board received instructions from representatives of the Brown estate and the Nelson Hotel Company to the effect that their frontage could be recorded in favor of brick pavement. These interests are the largest individual holdings in the street except those of the railway companies and it is not likely this property will be represented, for the agents here have received no instructions as to how to respond to the request of the local board.

As the frontage was represented the standing was as follows:

Brick .....	3,007
Asphalt .....	568
Asphalt, brick gutters .....	309

The brick paving votes now are better than three to one against the other two combined, and it is likely this ratio will be carried out to the end. If this is so there will be little discussion on the material question and the present material will be replaced with brick.

With brick it is said the work can be carried on easily by the contractor, and that delay to traffic will not be such as to do material injury to business.

Members of the local board are likely to meet soon again and at this meeting it will be definitely decided as to material and then it will be for the department to get in readiness to take up the work. Most of the job, if not all, can be completed this fall, and it is likely the work when started will be taken up at the girder bridge, that part of West State street leading west from the bridge to be the first work done. South Main street to the I. C. tracks will be next tried and for the remainder no time has been set when this will be taken up, though it will be done this year if the time will permit after the other two stretches are completed.

**BARBER AND O'NEIL AFTER MEN INTERESTED IN BARBERTON POTTERY CO.**

The first hearing in the six cases filed by Ohio C. Barber and M. O'Neil against stockholders in the old Barberton (Ohio) Pottery Company to recover \$25,000 was heard before Judge Doyle. The first of the six cases to be heard is that against John McNamara.

Barber and O'Neil allege in their petitions that before the Barberton Pottery Company went into bankruptcy they loaned to the stockholders the sum of \$25,000 to clear up the indebtedness. They ask to recover this amount from the stockholders in proportionate amounts according to the amounts of stock they held in the defunct company.

The six men against whom the suits were filed are McNamara, A. J. Stuhldreher, J. W. Tracy, R. H. Hawkins, L. C. Miles and H. B. Manton. Separate cases were started against each of these stockholders.

In the McNamara case, which is to be decided first and upon which the fate of the other five cases probably depends, \$1,400 is asked by Barber and O'Neil. The defense claims that Barber and O'Neil should have made their claims before the referee in bankruptcy when the company's matters were being adjusted in that court.

### VOIDS, SETTLEMENT AND WEIGHT OF CRUSHED STONE

The University of Illinois Engineering Experiment Station has recently issued Bulletin No. 23, "Voids, Settlement and Weight of Crushed Stone," by Ira O. Baker. This bulletin gives the results of some experiments to determine the proportion of voids in crushed stone loaded by various methods in cars and in wagons, to find the amount of settlement during transportation in wagons and in cars and also to obtain the relation between the weight of a unit of volume of the solid stone and that of the same volume of crushed stone immediately after being loaded in various ways, into cars and wagons, and also after being transported different distances. Crushed stone is usually nominally bought and sold by volume but really by weight, since in ordinary commercial transactions the weight of a cubic yard of crushed stone is assumed and the number of yards in a shipment is obtained by dividing the total weight by the assumed weight of a cubic yard; and yet there seem to have been almost no experiments made to determine the actual weight of a cubic yard of crushed stone under any particular condition. Apparently the only experiments heretofore made upon this general subject are a few brief ones upon trap rock, conducted by Mr. McClintock, lately president of the Massachusetts Highway Commission. An account of his experiments is presented and discussed in this bulletin, but the main features are an elaborate series of tests upon crushed limestone from Chester, Joliet and Kankakee, all in Illinois. All the results are summarized in a table which gives for different sizes of crushed stone the co-efficients by which to multiply either the weight of a cubic foot of the solid stone (or its specific gravity) to get the weight of a cubic yard of the crushed stone at the crusher and also at the destination, for stone from the three different quarries. This elaborate table is summarized in the following statement: The mean co-efficient by which to multiply the weight of a cubic foot of solid limestone to obtain the weight of a cubic yard of crushed limestone is as follows:

For 1/2-in. screenings.....	15.5
For 1/2-in. to 2-in. stone.....	14.6
For 2-in. to 3-in. stone.....	15.2

For trap rock the corresponding co-efficients are as follows:

For 1/2-in. screenings.....	14.6
For 1/2-in. to 1 1/2-in. stone.....	13.5
For 1 1/2-in. to 3-in. stone.....	13.9

Copies of this bulletin may be obtained gratis upon application to the Director, Engineering Experiment Station, Urbana, Illinois.

L. F. BRECKENRIDGE,  
Engineering Experiment Station,  
University of Illinois,  
Urbana, Illinois.

June 25, 1908.

### BRICK FAMINE IN DENVER

Denver has a brick famine. It is reported that there are not enough brick in the city to meet the requirements of the buildings now actually under construction. The brick yards are all cleaned up, and builders expect they will be forced to make importations. An exceptionally active demand for brick is given as the cause of the famine.

### BIRMINGHAM DISTRICT WILL GET BIG FIRE BRICK PLANT

The latest industry attracted to Birmingham, Ala., is a quarter of a million dollar fire brick plant to be erected in the district by the Harbinson-Walker Refractories Company of Pittsburgh.

President H. W. Croft has been in the city recently and it is said that an analysis of the clays in this district showed that with proper mixing the raw material would serve every purpose. The plant will give employment to several hundred men. The site has not yet been selected, although it was rumored that it would be put up at Wylam, in the western part of the county.

The Harbinson-Walker Company is one of the largest concerns in the United States, owning properties in several states and operating nearly thirty plants. They are represented in Birmingham by Shook & Fletcher as sales agents.

It has been known that a fire brick plant would be built in the district for some time. The numerous industries in this section use an immense amount of refractories in construction and repair work, and it is said that the big company was constrained to build here to save freight to the local consumers.

Work will most probably be begun on the plant in the next few weeks.

### STOP THE STOPS

The battle cry of the Chicago Brick Machinery Co. this year is "Stop the Stops or the Stops Will Stop You," and in addition to their Up-to-date Machinery Outfits they have been giving special attention this year to the little leaks on the yard that absorb the profits. That they have succeeded in stopping some of these leaks is shown by such letters as the following:

CHICAGO, APRIL 22, 1908.  
Chicago Brick Machinery Co., Great Northern Bldg.,  
Chicago, Ills.

GENTLEMEN: We enclose check for the two "Chicago Piano Wire Screens" furnished last fall. We take pleasure in stating that the money paid you for these Screens is a most profitable investment.

We had been subject to constant Screen troubles, resulting in costly stops. Your Screens have stopped the stops, and consequently the resultant loss of profit. These Screens will pay for themselves many times over in the course of a season.

Very truly yours,  
AMERICAN CLAY PRODUCTS CO.,  
(Signed) By Martin W. Lauer,  
President.

### CATALOGUE NO. 31A

The above is the name of the latest catalogue on Jeffrey Pulverizers, made by the Jeffrey Manufacturing Company of Columbus, Ohio.

This catalogue contains over eighty pages dealing with crushers and pulverizers in all sizes, styles and for all conditions. It also includes a line of drying machinery, mixers, dump cars, conveyors and elevators. If you are interested write to them at Columbus, Ohio, and mention the Clay Record.



### THE DOULTONS MAY BUILD A POTTERY IN COLUMBIA

There is a probability that Victoria, B. C., may have a large pottery works in the near future, a branch of the famous Doulton pottery of London, England. There is in the city a representative of the firm, and a relative of the founder in the person of Orrok M. Doulton, of London, England. This gentleman is here looking up business and at the same time with an eye to establishing on the coast.

When seen Mr. Doulton denied that he had made any arrangements for establishing a branch here, but acknowledged that he was here on business and that there was a probability of his making this his headquarters in the future.

"This field," said he, "has been almost controlled by the American manufacturers in the past. It is all the more difficult on that account for an English firm to enter the business. The change has come, however. When I started across Canada I expected to make a flying trip, but the immense possibilities of the country have made it necessary for me to cover the country more thoroughly than I expected. Many people ask me why we delayed so long in breaking into this territory. Of course my answer was that the business in England, and on the European continent has been so good, that it was quite unnecessary to look for new territory. Now that the trade over there is not brisk we are looking round for other opportunities of extension.

"The possibilities out here, I recognize, are very great. I have not yet seen this city, but Vancouver is a very busy place."

### DECISION Re FIRE BRICK

The Canadian Customs Commissioners have given decision interpreting the duties on fire brick as follows: Fire brick (9 inches by 4½ inches by 2¼ inches) valued at over \$13 per thousand at place of export are to be admitted free under tariff item 281 (fire brick of a class or kind not made in Canada, free) until otherwise ordered, but fire brick valued at or less than \$13 per thousand at place of export, are held to be made in Canada and subject to duty under tariff item 282 (manufacturers of clay not otherwise provided, British Preferential tariff, 12½ per cent.; general tariff, 22½ per cent.) in effect from May 1. Locomotive fire brick (arch blocks, fire box blocks, boiler tile) and fire brick for stove linings are made in Canada and importations thereof are rated for duty under tariff item 282. It is further noted (a) That importations of above described fire brick as rated for duty under tariff item 282, are rendered subject to special or dumping duty in cases where the true selling price (i.e. place of shipment) to the purchaser in Canada, is more than 7½ per cent. lower than the value of the same for duty purposes, and (b) that fire clay gas retorts, hollow shapes, and hollow blocks, although made of fire clay, are rated for duty under tariff item 282.

The Lexington (Ky.) Brick Co. has resumed operations after a shut down of several months. Seventy-five men are employed.

The plant of the Simons Brick Co., at Santa Monica, Cal., which has been closed down since last November, has resumed operations.

### BIG SLUMP ON IN BUILDING LINE

Building in South Bend, Ind., is the slowest it has been in fifteen years, according to a statement made by E. A. Morse, who has had control of the brick trade of this city and nearby community for about that time. His opinion is corroborated by others interested in the brick business and by architects, contractors and builders. No reason for the panic is given save the financial depression of several months ago.

Gary seems to be the real building center in this part of the state at the present, the city having more business than any other of twice its size according to builders. The South Bend Brick Company has large contracts in Gary and hardly a day passes but that an order comes from that direction. The Poleolar brothers, proprietors of the Philadelphia candy store, are putting up a two-story store building in Gary, which is rapidly progressing and the George Dodd blasts there is about completed. The South Bend Brick Company received an order from a Philadelphia contractor for 400,000 common pressed brick and about 300,000 faced brick. Other orders equally large came from the same source.

Notwithstanding the fact that building looks as if it would keep the slow gait it has maintained the past few months until next fall, the South Bend Brick Company opened its yards Monday. Mr. Morse is confident that business will pick up after the conventions at Chicago and Denver, which he thinks has seriously disrupted affairs, merchants being up in the air as to the successful candidate and the effect on trade.

### A WISE LABOR UNION

There has been some speculation among those interested in building as to how the carpenters and other woodworking unions felt in regard to the increasing use of fireproof construction. It was generally thought that human selfishness would prompt them to oppose a mode of construction that threatened the utter elimination of their trade. But that the carpenters of the country are intelligent and progressive spite of any self-interest is evidenced by what they are doing at Indianapolis, Indiana. There the Brotherhood of Carpenters and Joiners is erecting a three-story office building. The law does not compel that buildings of that height be fireproof but the carpenters of their own volition, realizing the advantages that will accrue to that building by constructing it right, regardless of the minimum requirements of the city ordinance, have decided upon making it not a stone-faced wood-joisted affair, nor a concrete block building, nor of reinforced concrete, but of the best construction known, a brick and terra-cotta external wall, a steel frame, fireproofed with hollow fireproof tile, fireproof tile floors and partitions, a structure that can neither be destroyed by fire nor be seriously injured thereby.

### GOVERNMENT CONTRACT WILL KEEP ALLEGHENY VALLEY BRICK PLANT RUNNING NINE MONTHS

A large order has been received by the Allegheny Valley Brick Company, opposite Tarentum, which will keep the plant busy for nine months. The order, which is for a large quantity of paving brick, was received from the government for work at Washington, D. C.

## POTTERY NEWS ITEMS

James Tams, president of the Greenwood Pottery Co., Trenton, N. J., will marry Miss Emma Ackers of Philadelphia. The couple will sail for Europe July 1st.

The Phoenix Pottery Co., Bordentown, N. J., has been incorporated with \$50,000 capital stock. Incorporators are John Cochran, Daniel Allen and George Cochran.

The Superior Porcelain Co., New Cumberland, W. Va., has been organized with \$35,000. Incorporators are John A. Campbell, C. S. Bradley, G. W. McNeil, T. R. Swaney, and William McDonald, all of New Cumberland.

The Wabash Pottery Co., of Roseville, Ohio, has been incorporated with \$10,000 capital stock. Incorporators are K. S. Keldon, B. F. Stokely, J. A. Cowan, David L. Melick and Geo. W. Owens.

The Garden City Pottery on north 6th St., San Jose, Cal., is to be built. Daniel Raymond is vice-president and manager.

The Ionia Pottery Co., at Ionia, Mich., will build a large addition to their plant on account of the demand for their goods.

The Ironsides Pottery Co., at Bordentown, N. J., has resumed work after being closed down for several months.

Calhoun, Mo., is organizing a pottery company with \$8,000 capital stock.

The Plymouth Stoneware Co.'s plant at Marshalltown, Ia., is making satisfactory progress. A large number of families have already moved to the town.

Hon. James Dunsmuir is back of a project to establish a pottery at Bunaby, B. C.

The Rexall China Co., Hot Springs, Ark., has been incorporated by E. E. Spencer, A. A. Reynolds and W. H. Tarver.

The Novelty Pottery Co., Roodhouse, Ill., recently elected the following directors:—E. H. Higbee, S. B. Search, and G. N. Vansickle.

Fires have been started under the first kiln of the Stauffer pottery at Meadowdale, Wash., which will manufacture decorated flower pots and similar articles.

O. M. Doulton, of the world famous Doulton ware, is now in Victoria, B. C., and may start a Doulton pottery there.

The Phoenix Pottery Co., Bordentown, N. J., has been incorporated with \$50,000 capital stock to make pottery and earthen products. Incorporators are J. Cochran and D. Allen, of Trenton, and G. Cochran and W. H. Williams, of White Hill.

The Globe Pottery, Fieldsboro, N. J., have completed the reorganization of the company and will resume operations in a few days.

## PLUCKY POTTER BECOMES DOCTOR

Plucky John Evans, an East Liverpool operative potter, has just been graduated from the Jefferson Medical College, Philadelphia. Evans paid for his education by working at the bench in the Liverpool potteries, starting young and going to the public schools when he could. After entering college he spent each of his vacations at work in some pottery instead of at play. He was given every encouragement by the manufacturers who followed his course, and when he returns to his old friends he will be well received. There are many successful professional men in the country who paid for their education and learned the lessons of manhood in the potteries.

## SAND OR LIME BRICK OR BLOCK NEWS

The Continental Artificial Stone & Mfg. Co. has been incorporated with \$50,000 capital stock. Incorporators are A. Truliot, T. B. Tracy, A. K. Harper, J. D. Jones, J. H. Boston, and H. H. Jones, of Lexington, Ky.; Harry W. Davis, of Wilmington, Del.

All efforts to settle the claim of L. W. Servey against the Sandstone Brick Co., Schenectady, N. Y., for the loss of his son's life have been unsuccessful and action has been started against the company.

The Compressed Flint Brick Co., Webb City, Mo., will establish a plant to make 10,000 brick daily. A. M. Wagner is secretary and treasurer of the company. A plant will also be established in Kansas City later.

The machinery for the plant of the Montana Granite Brick Co., Helena, Montana, is now on the way from New York, and the buildings will be built soon as the Northern Pacific Railway builds a side track. W. R. Strong is the manager.

The Excelsior Granite Brick Co., Chicago, Ill., has been granted a charter with \$85,000 capital stock. Incorporators are Anton J. Schmid, Casper Schmid and L. H. Pleins.

Suit has been filed against the Houston (Tex.) White Brick Company asking for the appointment of a receiver and seeking to foreclose a mortgage against the property.

A plant for the manufacture of sandstone brick is to be established in Vancouver, B. C., by the American Sandstone Brick Machinery Co., of Saginaw, Mich. The work is being supervised by Herman Schmeck.

The Brinkley Concrete Brick & Paving Co., Lonoke, Ark., are doing a rushing business in their line.

The Red Wing (Minn.) Brick Co., a sand lime brick works, is doing a rushing business. They are crowded with orders and are shipping brick throughout Minnesota, Iowa, Wisconsin and both of the Dakotas.

## BRIDGE WRECK CLOSES BRICK PLANT

"We're right up against it and there is no mistake about it," said James L. Breed, general manager of the New York Brick & Paving Company, Syracuse, N. Y.

The company has found it necessary to prepare to close its brick yard in the western part of the city on account of inability to get raw material from its beds at Belgium, on Seneca river. This is due to the closing of navigation on the part of the Oswego canal affected by the crippled bridge in North Salina street.

Business has been good at the plant all the spring and the supply of raw material on hand is low. The day the bridge wreck occurred the company had a big boat filled with clay ready to start from the beds to Syracuse. It was said yesterday that there is no way to get it until the bridge is raised to let boats pass.

The company was preparing to start its yard on full time with 150 men employed, and besides depriving this number of men of work the shovelers at the beds will be idle.

Mr. Breed said that the stock of paving brick on hand is not large. This company was given a two months' set-back last summer when traffic on the Erie canal was held up by the break near West street over Onondaga creek.

## MISCELLANEOUS ITEMS

The Empire Brick and Gas Co., New Albany, Kansas, has been incorporated with \$50,000 capital stock.

After being idle for some months, the Osceola Silica and Fire Brick works at Osceola Mills, Pa., have resumed operations.

The Fertile (Ia.) Clay and Veat Co. have started their big plant equipped with Ross-Keller triple pressure brick machinery.

Notice of change of name from C. M. Miller Manufacturing & Mining Co., to Wabash Brick Co., at Terre Haute, Ind., has been filed.

A. L. Edwards has retired from the Edwards Brick Co., at Columbia, Mo., on account of ill health and is now at Excelsior Springs to regain same.

The Acme Tile and Brick Co., Tremonton, Utah, have installed a new 40 horse power gasoline engine in their factory. Mr. Sommer is the proprietor.

The Lenten Brick Co., Philadelphia, Pa., has taken title to land at Passyunk Ave., from 27th to 28th Street, and will use same after some improvements are made.

Stevens Bros. & Co. have purchased a big tract of land near the Georgia Ry. depot at Milledgeville, Ga., and will erect an immense pottery and sewer pipe plant.

The Terry-Holmes Co., of Kingston, N. Y., has been incorporated to make and market brick. Directors are David and Jay Terry, of Kingston and F. L. Holmes of New York.

The Ceramic Brick Co's., works at East Liverpool, O., has been sold to John H. McCord of Wellsville, one of the directors of the company. He will start the plant after some needed repairs are made.

Dolomite, Ala., is to have a sewer pipe and fire brick works employing 150 hands. Twenty-five acres have been purchased and 50 houses are to be built at once. Birmingham capital is back of the movement.

The Fort Dodge (Ia.) Superior Clay works has been incorporated with \$50,000 capital stock. Henry Engholm is president, Eli P. Casavaw, vice president, Fred Reeck, treasurer, and George Habenicht, secretary.

The Vulcan Iron Works, Mason City, Ia., has just furnished the Sheffield (Ia.) Brick and Tile Co. with 306 high grade brick cars. They are also installing a gas furnace which will give a better heat, used in building cars.

A brick and tile plant is to be located at Indio, Cal., by W. F. Everett, J. E. Bond, Phillip Ross, Wallace Wilkerson and Charles S. Lewis of Indio, William Framenz of San Bernardino, and J. A. Stokes of Los Angeles, Cal.

The Capital Brick and Tile Corporation, Alexandria, Va., has been incorporated with \$500,000 capital stock. E. F. Colladay is president, R. E. P. Kreiter, vice president, and Pearl Tharite, secretary and treasurer, all of Washington, D. C., the home office of the company.

The American Vitrified Brick Co., capitalized at \$100,000, is to build a plant at Caney, Kansas. The officers are O. A. Kentner, president and general manager, of Coffeyville, G. W. Cannelly of Caney, vice president, John B. Paul of Monod City, treasurer, and E. N. Gause, of Mound City Secretary.

The Orange (Texas) Brick Co. has dissolved and surrendered its charter to the state.

Teters & Reynolds have opened up a brick yard at Dixon, Wyoming, and are employing 15 men daily.

The Sidney (B. C.) Brick and Tile Co., recently established, has made its first shipments and will now continue at its fullest capacity.

The brick and tile works of W. E. Lyons and Co., Carthage, Ills., is now running full force turning out tile from 3 to 12 inches, that are of a very superior quality.

The plant of the Bippus (Ind.) Tile Co. will cost \$30,000 instead of \$15,000, the cost of the old plant. It will be made fire proof and ready to operate in August.

B. F. Lucas has been elected manager of the Lehigh (Ia.) Clay Products Co., and will move there from Celina, Ohio. Warren Overpack, the former manager, will have charge of the sales and move to Webster City.

The railroad and warehouse commission of Minnesota issued an order to the Northern Pacific Railway, directing them to put in a switch at Barnum, Minn., to the brick plant of Pillatzke Bros. Brick Co., the company to pay part of the installation.

West Chester, Pa., is to have another brick works. P. H. Corcoran & Bro., William Walter, and John C. Ferron, of West Chester, and the Smith Brick Mfg. Co., of Philadelphia, are interested. John C. Ferron will be the manager and the plant will be located on the property of Edward Walter below the roundhouse of the P. B. & W. Ry.

## DIRECT HEAT

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GLASS SAND  
ROCK, CLAY  
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**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

**American Process Co.,**

68 William St.

NEW YORK CITY

## CLAY RECORD.

35

The Okmulgee (Okla.) Brick & Coal Company are installing a paving brick plant.

I. G. Poston, of Veedersburg, Ind., is testing shales from Pana, Ills., with a view of building a large plant there.

Brick manufacturers of South Bend, Ind., have announced that the price of brick has been advanced 25 per cent.

A brick yard is to be opened up at Agricultural college, N. Mex., and will make brick for all the buildings of the college.

A new brick company is to be established at Stanton, Del., to be known as the Stanton Brick Co., capital stock, \$250,000.

The Cheney (Wash.) Brick Co. started their plant, making the first brick for two years. The plant will be kept at full capacity.

The Keatersville Brick Company's plant at Keatersville-on-the-Hudson, N. Y., started up with 156 hands. Frank S. Gary is in charge of the plant.

The Northern Clay Products Co. at Anacortes, Wash., has increased its capital stock from \$25,000 to \$50,000 and will double the capacity of the works.

Evergreen, Alabama, citizens want a brick works and want information as to machinery, etc., about same. The Conecuh Record, Evergreen, Alabama, can be addressed.

More than \$15,000 will be spent in improvements at the plant of the Golden (Colo.) Pressed & Fire Brick Co. The enlargement was necessary on account of the increase in business.

The New York & New Jersey Brick Co., Newark, N. J., has been incorporated with \$125,000 capital stock. Incorporators are Charles E. Patton, George Tiernan, and Frank H. Parcels.

Complete equipments to W. E. Fish, Aberdeen, South Dakota, Messrs. Larson & Fors, Castlegar, British Columbia, E. F. Church, Joseph, Oregon, W. F. Hardin, Guldendale, Washington.

The Rawson (Ia.) Tile Co. held a public reception at their plant, showing the farmers how good tile are made. After speeches were made by the mayor and Rev. A. M. Smith, refreshments were served.

The New York Brick & Paving Co., Syracuse, N. Y., will close their plant on account of being unable to get material from Belgium through the closing of the Oswego canal. One hundred and fifty men are employed.

The Chamber of Commerce, Astoria, Oregon, will shortly establish a small plant to manufacture semi-porcelain and sanitary white ware and want information, data and some specifications covering the price of a small plant. Also want a chemist and specialist for manager. J. H. Whyte is manager of the Chamber of Commerce.

The Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania, continue to ship a large number of their Horse Power equipments to the far west, adding continually to their list of shipments during the past few months. Among the shipments of these Horse Power outfits recently shipped, we mention the following:—

The Purinton Bros. Co. are now burning their first kiln of brick for the season at Augusta, Maine.

Goeller & Wattenburg, Klamath Falls, Oregon, will install machinery for pressed brick manufacture.

The Union Brick Co., Iola, Kansas, has shut down so as to install an oil burning system in their plant.

T. H. Hyatt, Columbia, S. C., has a prospectus out to help him establish a brick plant to make vitrified brick.

Alexander Carter, of Gonce, N. H., has begun the manufacture of brick on the White farm near Farmington.

Clay from Lewis Hanks' farm east of Allbia, Ia., has been tested and the citizens are trying to establish a plant there.

The Harbison-Walker Refractories Co., Pittsburg, Pa., will build a \$250,000 fire brick plant in the Birmingham district.

President W. T. Jack, of the Burley (Idaho) Townsite Co., will purchase a brick making outfit to manufacture brick for the new hotel and other enterprises.

The Brownwood (Tex.) Brick & Tile Co. has been incorporated with \$25,000 capital stock. Incorporators are J. D. Fay, Brooke Smith and H. W. McGhee.

The Brick & Tile Co., Shelbyna, Mo., has been incorporated with \$12,000 capital stock. Incorporators are G. A. Martin, Jacob Rabey, P. F. Baldner and others.

The Federal Prison Brick Yard at Leavenworth, Kansas, has just finished three modern kilns, and the new yard, which has been under construction for three months, is about completed.

The Business Men's Association of Alliance, Ohio, have before them the proposition to establish a clay product company there, using the clays found on J. J. Harkins' farm north of the city.

Rich Hill (Mo.) Sewer Pipe Co. will establish a plant to manufacture sewer pipe, flue linings, etc., making 1,400 cars of ware annually. The managing officers are G. T. Milgate and J. D. Fowler.

The Temple Fire Clay Company, Temple, Pennsylvania, have just installed on their plant a "Martin" 5-ft. Dry Pan, Elevator and Octagon Revolving Screen, for reducing sand rock to fine sand.

The Narragansett Fire Brick Co., Somerset, Mass., has been incorporated with \$100,000 capital stock. President is William E. Fuller, of Falls River; treasurer, John B. Hadaway, Swampscott; clerk, John Bright, of Somerset.

The Malvern Clay Co., of Malvern, O., has been consolidated with the Collinwood-Diekman-Duty Co. of Carrollton and Collinwood, O., and will be known as the Diekman-Duty Brick Co., with offices in the Rose building, Cleveland, Ohio.

The Imperial Silica Sand Co., Jersey City, N. J., has been incorporated with \$100,000 capital stock. Incorporators are Robert H. Chinnock, Holger Kommerdale and Harding Kimberland. The company will deal in sand and clay and manufacture paving and pressed brick.

Mr. Max Schmitt of Cullman, Alabama, has purchased an outfit of Crushing Machinery from the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania, including the "Martin" No. 4 Rock Crusher in combination with a "Martin" 9-ft. Dry Pan.



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